NETWORK WORLD
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Cisco preps mainframe channel link

By Maureen Molloy
Senior Editor

MENLO PARK, Calif. — Cisco Systems, Inc. will bring fresh firepower to the SNA internetworking battle later this year when it announces interfaces supporting channel-attachment of its high-end router to an IBM mainframe.

That will position the Cisco 7000 Internetwork Router as an alternative to an IBM 3172 LAN controller and, in some cases, an IBM 3745 front-end processor. The interfaces could lower network costs and improve performance by eliminating intermediary devices between the router and IBM host.

"An intermediate device adds three things: cost, an additional point of failure and performance overhead by introducing an element of latency," said Joe Mohen, chief executive officer of Uniondale, N.Y.-based Proginet Corp., a software and services firm that specializes in file-transfer applications for IBM mainframes. "Cisco is the router vendor I would bet on to make the biggest and most significant dent

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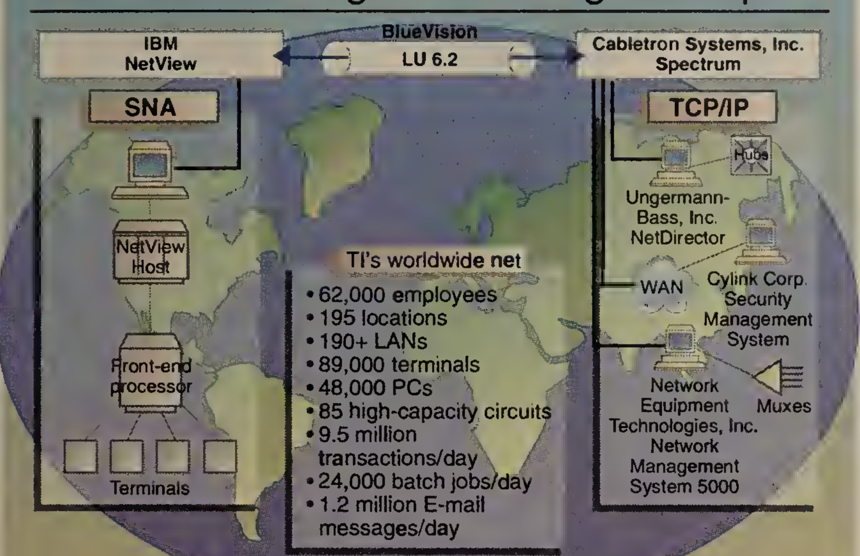
TI on track with global management plan


IBM NetView
BlueVision
LU 6.2
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Terminals
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WAN
Cylink Corp. Security Management System
Network Equipment Technologies, Inc. Network Management System 5000
Muxes
TI's worldwide net
• 62,000 employees
• 195 locations
• 190+ LANs
• 89,000 terminals
• 48,000 PCs
• 85 high-capacity circuits
• 9.5 million transactions/day
• 24,000 batch jobs/day
• 1.2 million E-mail messages/day

Texas Instruments, Inc. will be positioning Cabletron's Spectrum net management platform as the manager of managers for its worldwide net, using Cabletron's BlueVision as the bridge between its SNA and TCP/IP realms.

GRAPHIC BY TERRI MITCHELL SOURCE: TI, PLANO, TEXAS

TI at work on lights-out network management plan

By Skip MacAskill
Senior Writer

PLANO, Texas — If ambition is a species of madness as Dutch philosopher Benedict de Spinoza wrote in his essay "Ethics," then the people at Texas Instruments, Inc. here are downright crazy.

TI has nearly completed the first of three phases of an ambitious plan aimed at making Cabletron Systems, Inc.'s Spectrum the manager of managers in a "lights-out" environment where various tools collaborate in automatically responding to network and systems problems.

The management plan is tied to TI's network consolidation effort, under which its 36 data centers are being phased out in favor of a single facility in Lewisville, Texas. That project, which will be completed in April 1994, will centralize the daily processing of 9.5 million transactions, 24,000 batch jobs and 1.2 million elec-

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IBM stoking up its client/server engine

Will unwrap new 3172 LAN controller, software enhancements and Client/Server Series packages.

By Michael Cooney
Senior Editor

RALEIGH, N.C. — IBM this week will add to its client/server lineup a more powerful 3172 LAN controller, enhancements to two key mainframe programs and a framework to shape future client/server directions.

The 3172, a device for attaching local-area networks to mainframe channels, will get support for IBM's fiber-optic Enterprise System Connection (ESCON) mainframe channels and enhanced Fiber Distributed Data Interface support. It will also be outfitted with a new 50-MHz processor and a communications adapter that supports Systems Network Architecture and Transmission Control Protocol/Internet Protocol data simultaneously (*NW,* April 19, page 9).

For the mainframe, IBM will announce a new ESCON-compatible version of its LAN Resource Extension and Services (LANRES) program, which lets the mainframe act as a server for Novell, Inc. NetWare LANs.

IBM will also introduce LAN File Services/ESA, a replacement product for its Workstation LAN

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IBM execs spell out plan for high-speed, multiprotocol networking. Page 8.

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AnyNet puts new spin on multiprotocol nets. Page 49.

NETLINE

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AGGREGATE COMPUTING helps users build distributed Unix-based nets. Page 8.

NEWSPAPER

Carrier spat lands user in 800 portability limbo

Dispute points to need for caution in cutovers.

By Bob Wallace
Senior Editor

CALHOUN, Ga. — Ken Krasner hit a big pothole on the road to 800-service portability.

A net manager for Apache Mills, Inc., Krasner said carrier finger-pointing cost his company a half-day's worth of customer orders when he tried to switch providers under 800 portability.

Apache switched from AT&T to Sprint Corp. 800 service primarily for cost reasons shortly after portability began May 1. But a glitch that knocked out the company's service left both carriers denying they were Apache's Responsible Organization (RespOrg). With portability, users designate a RespOrg to handle 800-number trouble tracking and resolution.

NETWORK WORLD'S R.A.F. READER ADVOCACY FORCE

"It was a nightmare trying to get [either] of the carriers to address the problem," said Krasner, who called *Network World's* Reader Advocacy Force hot line (800-622-1108, Ext. 487) to report the problem. "AT&T said Sprint was the RespOrg because we had switched car-

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Timeplex to challenge router elite

By Maureen Molloy
Senior Editor

WOODCLIFF LAKE, N.J. — Ascom Timeplex, Inc. will announce this summer a gigabit-speed router it claims will rival top-of-the-line devices from Cisco Systems, Inc. and Wellfleet Communications, Inc.

Ascom Timeplex will also unveil new versions of its current Time/LAN routers, as well as two switches targeted at carriers that include support for frame relay and other services.

Company President William O'Connor discussed the product strategy in an interview, but Ascom Timeplex declined to reveal details about the new offerings. However, sources said the fully redundant, fault-tolerant Enter-

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SynOptics bridges element, enterprise management gap

Hub maker offers new management applications, intelligent SuperAgents that offload processing.

By Skip MacAskill
Senior Writer

SANTA CLARA, Calif. — Backed by a strong supporting cast, SynOptics Communications, Inc. last week unveiled intelligent agents that bridge the gap between enterprise management systems and element managers, and introduced new management applications that work on multiple platforms.

The Simple Network Management Protocol-based SuperAgents off-load work from SynOptics' Optivity management console by compiling data from multiple machines in a domain, processing it and feeding up only summary or critical information. The agents run on Unix platforms, such as Sun Microsystems, Inc.'s Solaris, Hewlett-Packard Co.'s HP/UX and IBM's AIX machines.

The SuperAgents feed information into SynOptics' Global Enterprise Management (GEM) applications, which can manage desktop systems, wide-area network services and gear, as well as hubs, servers and bridge/routers. SynOptics is working with HP, IBM, Intel Corp., NetLabs, Inc., Novell, Inc. and SunConnect to

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Do one-size-fits-all APIs deliver the right stuff?

Some say they are watered-down solutions.

By Bob Brown
and Wayne Eckerson
Network World Staff

Standard database and E-mail APIs sound great in theory: They promise to simplify development of distributed and mail-enabled applications. But whether they will ultimately achieve that promise is debatable.

Application program interfaces (API) for electronic mail, such as the Vendor Independent Messaging specification and Microsoft Corp.'s Messaging API (MAPI), let users do things they could not do before and offer immediate help in building message-enabled applications.

But database APIs — such as Microsoft's Open Database Connectivity and Borland International, Inc.'s Integrated Database Application Programming Interface — are viewed by many as watered-down solutions that may not have what it takes to support distributed applications.

"We need generic APIs, but they won't solve all of our problems," said Mark Gibbs, president of Gibbs & Co., a Ventura, Calif., consulting firm. "This is a case of one size not fitting all."

Users and analysts said data-

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FCC suspends bypass tariff decision; Teleport fumes

By Bill Burch
Washington Correspondent

WASHINGTON, D.C. — Competition in the local loop took a direct hit last week as the Federal Communications Commission decided to take five more months to decide what local telephone companies should be able to charge competitive access carriers for interconnection to their networks.

The delay means that a bypass-minded user that is not near a competitive access provider's fiber net may have to pay inflated prices for local carrier interconnection, if they can get it at all.

The FCC ruled in September that local carriers would have to allow competitive access providers to interconnect with their networks and support collocation of competitive access provider equipment in their central offices, a move that promised to widen the reach of the providers' services.

Earlier this year, the telephone companies filed tariffs for those services, which the competitive access providers claimed were inflated.

Last week, just as the FCC decision was set to take effect, the

(continued on page 64)

Briefs

MCI Mail set free. MCI International, Inc. and Motorola, Inc. last week announced that they have forged an X.400 link between MCI's Global Messaging Services and Motorola's Electronic Mail Broadcast to a Roaming Computer (EMBARC) wireless messaging network. This will enable MCI Mail subscribers to send wireless messages to EMBARC subscribers in 220 cities throughout the U.S. and Canada.

Hitachi looks to HP for management wares. Hewlett-Packard Co. last week said Hitachi, Ltd. has licensed the HP OpenView network and systems management product as the basis for its network management product line, NETMComet. NETMComet is intended to offer users integrated management of distributed computing environments, according to Hitachi. The product is expected to be available in December.

AT&T wins $400 million contract, plans ATM trial. Hospitality Franchise Systems, (HFS) Inc. last week awarded AT&T a five-year contract that could net the carrier $400 million. AT&T will provide 800 and other services to more than 3,600 franchised Days Inn, Howard Johnson, Ramada and Super 8 hotels around the world. The contract is an expansion of an older arrangement and will include toll-free service for Super 8 and Days Inn, which had been provided by Sprint Corp. and LDDS Communications, Inc., respectively. The carrier retained existing 800 service for the HFS companies.

In a separate development, AT&T last week announced an agreement with Kokusai Denshin Denwa Company, Ltd. for a joint trans-pacific Asynchronous Transfer Mode (ATM) technical trial that will begin next month and use a 9,000-mile undersea fiber to link equipment tied to an AT&T Network Systems GCNS-2000 at each site. The trial is designed to test multimedia applications over long distances and will also enable AT&T to examine ATM performance and quality levels and identify operational support system issues.

Microsoft expands scheduler line. Powercore International, Inc. this week will announce that it has signed an agreement with Microsoft Corp. to build a DOS version of Microsoft's Schedule+ work group scheduling product. Powercore is the leading vendor of group scheduling software with its Network Scheduler 3 product. The new product, Schedule/DOS, will be compatible with the Windows version of Schedule+. It will be available in the third quarter for $80 and will be comarketed by both companies. Powercore: (800) 237-4754; Microsoft: (206) 936-8080.

Middleware is trademarked. TechGnosis, Inc. has been granted a registered trademark for the term "MiddleWare" by the U.S. Patent and Trademark Office because of the company's early use of the term. TechGnosis sells data access software called SequeLink, which works with applications and database management systems running on multiple platforms.

Novell turned OEM. Novell, Inc. last week announced the availability of an X.400 OEM Development Kit that will let third parties link X.400 products to Novell's NetWare Global MHS messaging system. Retix was the first company to partner with Novell and last week introduced the X.400 for NetWare Global MHS NetWare Loadable Module. According to Novell, other companies considering an OEM partnership include Hewlett-Packard Co. and the Firefox Group.

CONTACTS

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Messaging product blitz on DEC conference agenda

Includes new X.500 pack, support for X.435.

By Bob Brown
Senior Editor

ATLANTA — Digital Equipment Corp. will unveil a slew of electronic messaging products at the Electronic Messaging '93 conference here this week, including X.500 software, support for the X.435 standard for EDI over X.400 and an upgrade to its X.400 messaging switch.

The company is looking to add functionality to its traditional messaging products while helping users migrate to standards-based systems, said Audrey Augun, marketing manager for enterprise mail and electronic data interchange systems.

The new X.500 Directory Server and X.500 Administration Facility are DEC's first stand-alone X.500 offerings and are intended to help customers create global messaging address books, said Faye Allen, DEC's business development and marketing manager for network operating software.

The Directory Server, which runs on VAX systems under OpenVMS and DECstations and DECsystems under Ultrix, stores user names and addresses. The Administration Facility is client-based software that enables directory lookups using a Motif-based graphical user interface.

The software complies with the 1988 X.500 standard but also supports features of the 1993 X.500 draft standards that Allen said are important for making X.500 a commercially viable offering.

Among these features are policy-based access control, which lets administrators set access controls on directories to limit who can see or modify directory entries. DEC also will enable X.500 to run over TCP/IP rather than just Open Systems Interconnection nets, she added.

Both X.500 products are available immediately. The server software costs from $8,000 to $20,000, while the client software is priced between $500 to $3,000 for system-based licensing and $500 to $800 for user-based licensing.

Early into X.435

Braving a new electronic data interchange path, the announcement of DEC/EDI 1.3 will make DEC the first major U.S. computer vendor to support the X.435 standard for running EDI applications over X.400 nets.

Support for the standard means users will be able to pack multiple items, such as a purchase order, interpersonal electronic mail message and a design specification, in the same X.435 envelope.

David Taylor, vice president of electronic commerce strategies at Gartner Group, Inc., a Stamford, Conn., market research firm, said DEC's support for X.435 should raise market awareness for the standard.

"The European market is easily a year ahead of the U.S. here," he said.

DEC/EDI 1.3 will be available in September. The product, which includes application, translation and communication server components, starts at about $14,000 on a VAX platform.

Other offerings

DEC is also expected to announced Version 1.2 of its DEC Mailworks for OpenVMS messaging server. New functionality includes support for Transmission Control Protocol/Internet Protocol nets, whereas the previous version ran only on DECnet. The new version supports DEC's TeamLinks Mail for Windows client software. DEC Mailworks for OpenVMS 1.2 will be available in July for $60 per user and $1,000 per server.

The company will also announce a new version of DECfax Mail 1.1, a product that integrates E-mail and facsimile capabilities. This version will enable cc:Mail and Microsoft Mail users attached to DEC messaging servers to send faxes from their desktops. The software previously supported only users of DEC E-mail systems. The software will ship in July and cost $3,500, including a fax modem.

DEC: (800) 344-4825.

AT&T offers new fraud monitoring

By Bob Wallace
Senior Editor

MORRISTOWN, N.J. — AT&T this week is expected to announce a low-cost toll fraud monitoring service that offers faster notification than current offerings and is expected to appeal to a much broader customer base.

An AT&T source who requested anonymity said that under the new offering, code-named NetProtect Plus, the carrier will immediately alert net managers when it notices unusual calling patterns and offer the option to block access to the site until the user's switch is secured.

"Users have been beating down our door for this type of service," the source said. "They want us to give immediate notification of suspected fraud and take action."

Under the existing NetProtect offering, which was announced in May 1992, AT&T monitors 800- and international service calling patterns and attempts to alert users of suspicious calls during a five-workday period.

Going the extra mile

NetProtect Plus, however, goes further, the AT&T source said. "If it's Saturday morning at 3 a.m. and we have [after-hours] contacts, we can certainly cut the loss to the customer by getting [there] at that time and having a crisis intervention plan on file," the source said. Under the existing plan, AT&T would not call the customer until Monday. This is key because a lot of hacking occurs during weekends.

The person also said AT&T will probably cap NetProtect Plus users' fraud liability at the current $25,000 per-incident level, although industry analysts speculate that the carrier might lower the cap or relieve the user of all liability.

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Compaq joins Microsoft at Work

By Fredric Paul
Senior Editor

NEW YORK — Compaq Computer Corp. last week unveiled plans for a new hand-held, pen-based computer that can be networked to other office devices via the new Microsoft at Work software architecture, also announced last week.

Due out in the first half of 1994, Compaq's new Mobile Companion is expected to weigh one to two pounds and cost $1,000 to $2,000. The name refers to its relationship with both its owner and the owner's primary personal computer. Mobile Companion will send and receive messages from the host PC via wired or wireless media, Compaq said, using Microsoft Corp.'s

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Beyond, Apple to lead EMA parade

By Bob Brown
Senior Editor

ATLANTA — The Electronic Messaging '93 conference here this week will serve as the stage for a slew of E-mail and related product announcements spanning the X.400, imaging, work flow, wireless and MHS markets.

Beyond, Inc. of Cambridge, Mass., will introduce BeyondMail 2.0, which can be used on both DOS- and Windows-based clients. It supports Novell, Inc.'s NetWare Global Message Handling Service plus new work flow and imaging capabilities. Earlier products came in separate DOS and Windows versions.

The addition of NetWare Global MHS will make it possible to support BeyondMail clients from NetWare Loadable Modules rather than having to dedicate a server to MHS. BeyondMail 2.0 will also be synchronized with the NetWare 4.0 NetWare Directory Service. The company is adding new work flow options for end users. While Beyond already offers forms and rules tools that electronic mail administrators use to build custom work flow applications, the new Serial Routing Slip lets end users define a sequence of recipients for a message without doing programming.

The new version also includes an embedded version of Watermark Software, Inc.'s Explorer Edition document imaging software. The software will allow BeyondMail users to embed images into messages to support automated paper processing and filing applications.

BeyondMail 2.0 will also feature enhancements that will enable E-mail administrators to mail-enable database applications. In addition, Beyond has built links to databases from Borland International, Inc., Oracle Corp. and others.

BeyondMail 2.0 will ship in the third quarter and cost $995 for a 10-user license. The software will cost $30 per licensed mailbox for existing users.

Apple expands offering

Apple Computer, Inc. this week will announce MacX.400 1.1, a new version of its X.400 message transfer agent software that lets users deploy Macintoshes as X.400 servers on Transmission Control Protocol/Internet Protocol networks. MacX.400 1.1 is designed to let Macintosh users exchange E-mail with users of other platforms connected to X.400 nets.

Version 1.0 only supported the Open Systems Interconnection protocol, limiting the Apple product to X.25 nets and OSI-over-Ethernet implementations.

Apple also announced MacX.400 1.1 Single Domain, an economical product for organizations that only need a single X.400 server, perhaps to tie into a public E-mail net. The MacX.400 1.1 offerings will come bundled with Apple's OSI Connection for Macintosh 1.1, which provides the OSI-over-TCP transport.

The TCP/IP support will enable users to send messages from Macintoshes via X.400 over the Internet and other TCP/IP nets. .

By year end, Apple plans to demonstrate MacX.400 support for asynchronous communications over regular telephone lines and have a product out in the first half of 1994.

MacX.400 1.1 will cost $4,950, while a single-domain version will cost $2,950. The stand-alone OSI Connection for Macintosh 1.1 will cost $199. All of the products will be available this summer.

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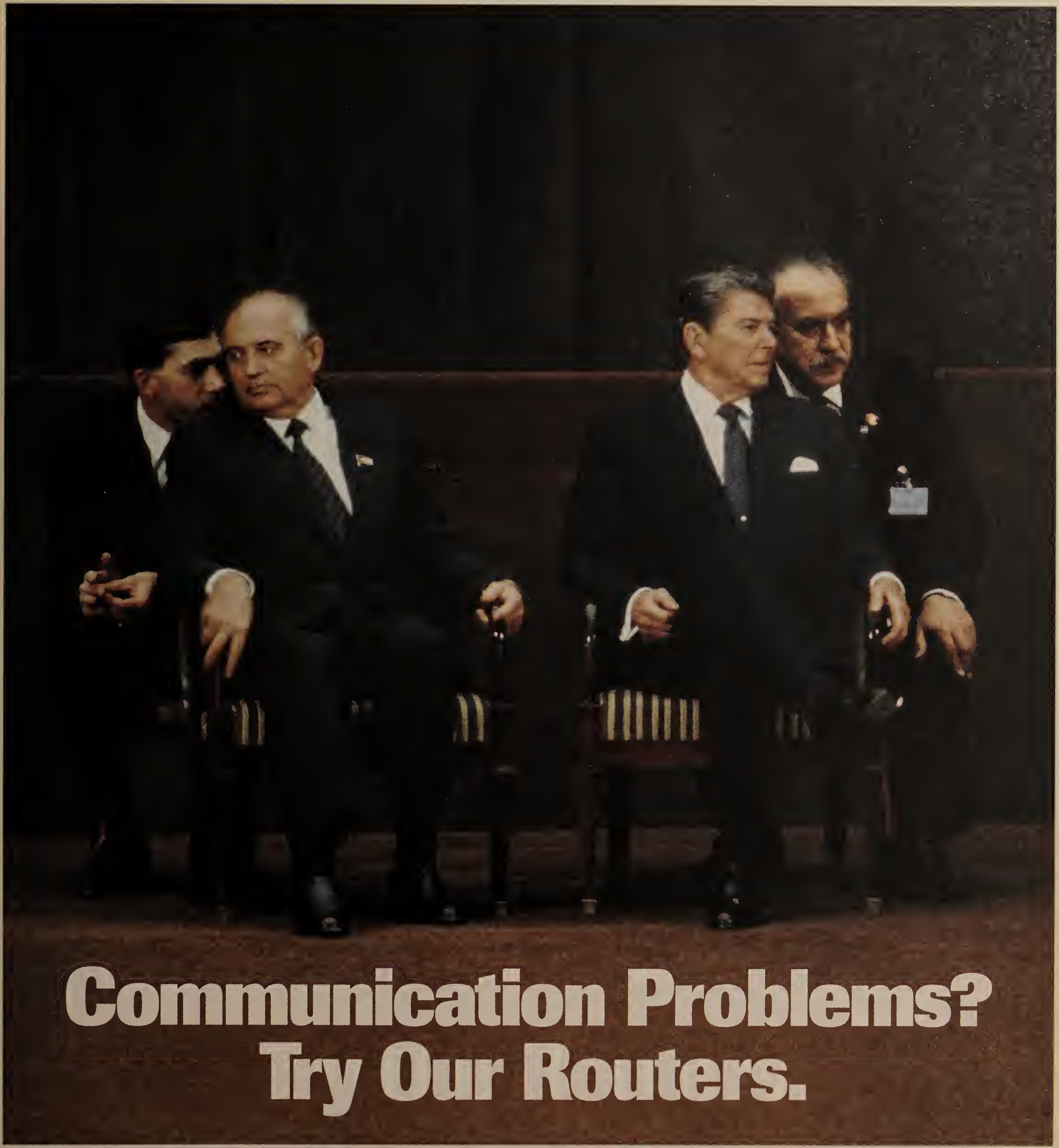
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DEC building gateway to IBM AS/400 environments

Software product will run on Alpha platforms.

By Jim Duffy
Senior Editor

ATLANTA — Digital Equipment Corp. is developing a Systems Network Architecture gateway that will foster peer-type communication between IBM AS/400s and DEC processors on DECnet and TCP/IP-based Ethernets.

DEC has offered IBM SNA gateways for years, but they have only supported access to IBM MVS-, VM- and VSE-based mainframes and applications. The new gateway will support the OS/400 operating system for access to IBM's mid-range Application System/400 applications, filling a conspicuous void in DEC's gateway offerings.

The gateway software runs on DEC's 64-bit Alpha platforms and enables those systems to be configured as IBM PU 2.1 Low Entry Networking (LEN) nodes, making it possible to integrate DEC systems into IBM Advanced Peer-to-Peer Networking environments. DEC's current gateways require dedicated VAX-based hardware.

PU 2.1 and LU 6.2 are the building blocks of LEN, which is a stepping-stone to APPN. DEC currently offers PU 2.1 support on its Ultrix-based SNA gateways via a year-old development agreement with System Strategies, Inc., but that product only provides support access to IBM mainframes.

DEC already resells a gateway from Madison, Wis.-based Wingra

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Sybase gives Replication Server details

By Bob Brown
Senior Editor

BOSTON — Sybase, Inc. last week released details of its Replication Server, a key cog in the database vendor's strategy for providing distributed systems.

Replication Server, part of Sybase's System 10 family of products outlined last fall and being rolled out this year, is designed to enable users to automatically distribute database updates across an enterprise.

Sybase's replication technology provides an alternative to two-phase commit used by Sybase and other vendors to maintain data concurrency. With two-phase commit, which was architected for applications that need 100% data consistency, no databases are updated unless all of them can be.

Replication, however, updates any database that is available at a given time and is aimed at serving the larger number of applications that can forgo real-time consistency of data in favor of high performance and availability.

Stewart Schuster, vice president of marketing at Sybase, said fewer than 5% of Sybase's customers use two-phase commit even though the technology has been available since 1986. He estimated that as many as half of Sybase's SQL Server customers will be at least testing replication servers by year end.

The new product comprises Replication Server, which runs on a different machine than the Sy-

(continued on page 61)

Software kit helps spread program load over nets

By Bob Brown
Senior Editor

MINNEAPOLIS — Aggregate Computing, Inc. last week announced a software development kit designed to let users distribute applications across Unix client/server environments.

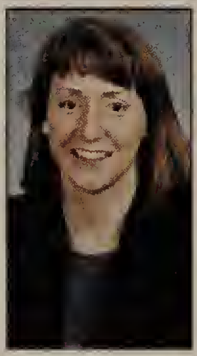
Aggregate's NetShare Software Development Kit is a set of application program interfaces (API) to NetShare services that act on the behalf of compliant applications to find processing resources on networks.

The software will help users get the maximum use from their network resources, much like utilities for mainframes allow MIS managers to make the most use of host systems, said Dave Duckworth, vice president of sales and marketing. It will support both compute-intensive applications as well as those that simply need to be scheduled to run on certain computers at specific times, he said.

Sharing processors

The NetShare APIs mask network complexities, operating systems and platforms from the applications so they can be distributed across heterogeneous nets, said Joan Wrabetz, president and chief executive officer at Aggregate.

"Our goal is to allow users that are sharing data and files to also share processors," she said.


Wrabetz

Michael Schneider, vice president of advanced technology at Gartner Group, Inc., a Stamford, Conn., market research firm, said Aggregate appears to have the functionality that is expected to show up in the next generation of operating systems, such as Microsoft Corp.'s forthcoming Cairo offering.

"What [NetShare] will do is increase the utilization of idle cycles considerably and speed up the running of applications" across a network, Schneider said.

"From a network manager's perspective, it means that you will be able to add new platforms to a LAN, for instance, and have those systems immediately integrated into the distributed environment," he said.

Main components

NetShare features a graphical user interface and consists of two main components: the Resource Management Subsystem and the Task Management Subsystem.

The Resource Management Subsystem is a dynamic store of information about network resources that can be called upon to locate available processors on a network. The Task Management System allows applications to be divided and run parallel across a network. It uses the Resource Management Subsystem to find the appropriate and available resources.

The NetShare Software Development Kit is in alpha testing and will be generally available in the fourth quarter. Pricing has not been fixed but will range from $10,000 to $40,000 for a single development copy.

There will be an additional deployment price for run-time sites.

Down the road, Aggregate plans to port its software to other platforms, though specifics about these plans are not yet available, Duckworth said.

Aggregate: (800) 966-1666.

IBM outlines high-speed technology architecture

Broadband Network Architecture prescribes flow of multiple protocols across ATM-based nets.

By Michael Cooney
Senior Editor

NEW YORK — IBM last week provided a glimpse of the architecture it will use to move users to the high-speed networking world of the future.

The Broadband Network Architecture defines how multiple protocols — including the Transmission Control Protocol/Internet Protocol, Network Basic I/O System and those used in Systems Network Architecture — will flow across high-speed networks based on Asynchronous Transfer Mode (ATM) and variable-length fast-packet technologies.

McGee

PHOTOGRAPHY ©1993 SCOTT MCKIERNAN

Rick McGee, director of IBM's networking systems architecture, told attendees of last week's Interlab New SNA Conference here that in the next 18 months, IBM will roll out a series of local- and wide-area high-speed networking products.

The products will include ATM-based LAN hubs and switches, which IBM had mentioned previously, that can link LANs or feed LAN traffic to new high-speed wide-area switches (*NW*, March 15, page 8). IBM will also offer high-speed routers and adapters for personal computers and controllers.

"This is a real architecture we are working very aggressively on, and you'll see announcements on products shortly," McGee said.

McGee offered little detail on product specifics but said the switches would be developed from existing IBM research work being done with products known as Paris and Planet. The Paris project uses fast packet switching to support voice, data and video at speeds of up to 622M bit/sec. Planet is a switch capable of handling variable- and fixed-length packets at gigabit speeds.

McGee said IBM will also roll out products that will help the high-speed switches provide bandwidth management, route optimization and flow control for local- and wide-area high-speed nets. "A lot can go wrong in a hurry when you have 3 million bytes of data flying across the country, so we'll provide a mechanism to control that," he said.

Marin said IBM will work with standards bodies and other ven-

(continued on page 67)

Xircom to enter market for wireless LAN adapters

By Fredric Paul
Senior Editor

NEW YORK — Xircom, Inc. later this month will introduce a new NetWave line of wireless local-area network adapters.

At the announcement, which will take place the day before PC Expo here, Xircom, a leader in pocket LAN adapters for portable computers, said it will reveal elements of the NetWave technology in an attempt to create a de facto standard for wireless LAN interoperability.

"Xircom is opening up the technology, and other companies will be providing it in different ways," said Phil Belanger, marketing director for Xircom's wireless products. "Xircom will not be the only company supplying the products." Other companies supporting the technology will be part of the NetWave Alliance.

Unlike wired LANs, wireless LANs from vendors such as Proxim, Inc., NCR Corp., Windata, Inc. and others cannot interoperate (*NW*, June 7, page 26).

"The lack of standards is holding back the growth of wireless LANs," said Craig Mathias, a principal at Far Point Group in Ashland, Mass.

Although it has yet to ship a wireless product, Xircom has submitted proposals to the IEEE 802.11 standards committee, as have several other companies. Xircom's proposal advocates a peer-to-peer approach, while IBM and others are pushing schemes with a central base station.

According to David King, Proxim's vice president of marketing, "You'll never get agreement until one company gets a dominant market share."

The wireless market is splintered today, which may be one

(continued on page 64)

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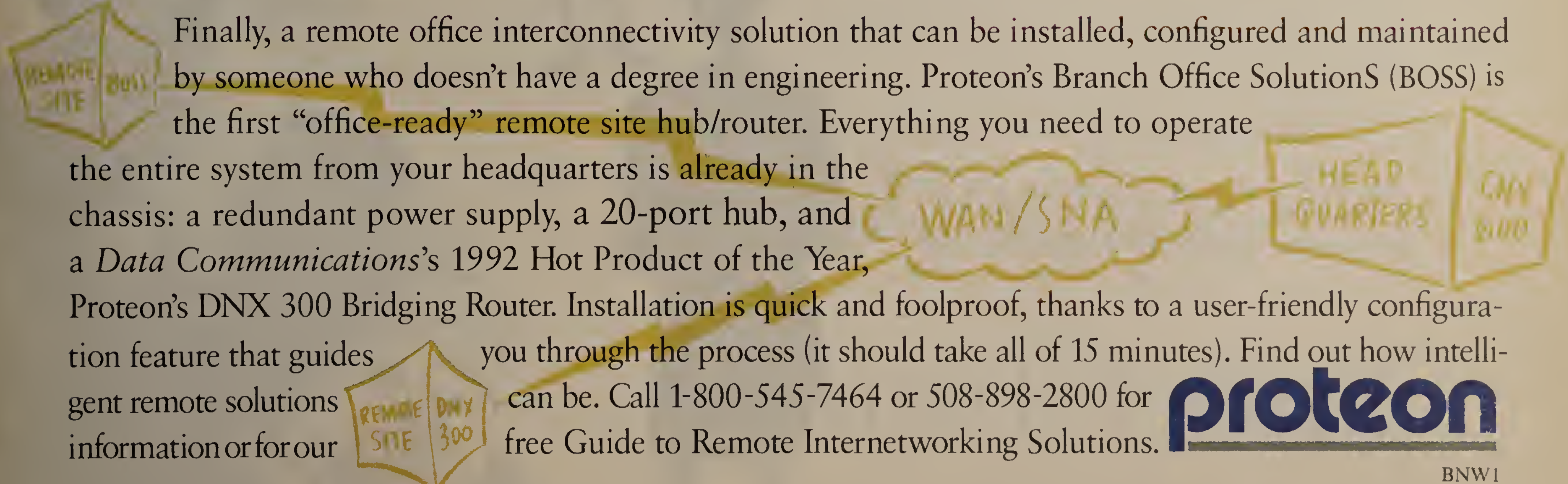

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1 Industry: (check one only)

01. ☐ Manufacturers (other than Computer/Communications)
02. ☐ Finance/Banking
03. ☐ Insurance
04. ☐ Real Estate
05. ☐ Healthcare Services
06. ☐ Legal
07. ☐ Hospitality
08. ☐ Retail/Wholesale Trade/Business Services
09. ☐ Transportation
10. ☐ Utilities
11. ☐ Education
12. ☐ Process Industries (Mining/Construction/ Petroleum Refining/Agriculture/Forestry)
13. ☐ Government, State/Local
14. ☐ Government, Federal
15. ☐ Military
16. ☐ Aerospace
17. ☐ Consultants (Independent)
18. ☐ Carriers
19. ☐ Interconnects
20. ☐ Manufacturers (Computer/Communications)
21. ☐ VAR/VAD/VAN/ Systems Houses
22. ☐ Distributors, Computer Related
23. ☐ Distributors, Communications Related
24. ☐ Other________________________________

2 What is your job function? (check one only)

NETWORKING MANAGEMENT

1. ☐ Networking Mgmt.
2. ☐ LAN Mgmt.
3. ☐ Datacom/Telecom Mgmt.
4. ☐ Engineering Mgmt.

MIS MANAGEMENT

5. ☐ MIS, IS, IT Mgmt.
6. ☐ Engineering Mgmt.

CORPORATE MANAGEMENT

7. ☐ Corporate Mgmt. (CIO, CEO, Pres., VP, Dir., Mgr., Financial Mgmt.)
8. ☐ Consultant (Independent)
9. ☐ Other________________________________

3 My responsibilities include: (check one only)

1. ☐ LANs/ Internetworking/ WANs
2. ☐ LANs/ Internetworking
3. ☐ LANs
4. ☐ WANs
5. ☐ None

4 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+
2. ☐ 50 - 99
3. ☐ 20 - 49
4. ☐ 10 - 19
5. ☐ 2 - 9.
6. ☐ 1
7. ☐ None

5 What is your scope and involvement in purchasing decisions for network products & services for your enterprise?

A. Scope (check one only)

1. ☐ Corporatewide
2. ☐ Multienterprise (consultants)
3. ☐ Departmental

B. Involvement (check all that apply)

1. ☐ Recommend/Specify
2. ☐ Approve
3. ☐ Evaluate

4. ☐ None (A or B)

6 Check all that apply in Columns A and B:

A: I am involved in the purchase of the following products/services.

B: I plan to purchase the following products/services in the next year.

Involved / Plan to Purchase

A B **LOCAL-AREA NETWORKS**

☐ 01. ☐ Local-Area Networks
☐ 02. ☐ LAN Servers
☐ 03. ☐ LAN Operating Systems Software
☐ 04. ☐ Superservers
☐ 05. ☐ Data Base Servers (Oracle, Sybase, etc).
☐ 06. ☐ Terminal Servers
☐ 07. ☐ LAN Services
☐ 08. ☐ LAN Storage Devices (optical, tape, disk, etc,. including backup systems)
☐ 09 ☐ Network Test Equipment
☐ 10. ☐ Hubs
☐ 11. ☐ Cables, Connectors, Baluns
☐ 12. ☐ UPS
☐ 13. ☐ Network Adapter Boards
☐ 14. ☐ Peer-to-Peer LANs
☐ 15. ☐ Wireless LANs
☐ 16. ☐ SNMP Network Management
☐ 17. ☐ ATM (Asynchronous Transfer Mode)

A B **INTERNETWORKING**

☐ 18. ☐ Bridges
☐ 19. ☐ Routers
☐ 20. ☐ Gateways
☐ 21. ☐ Bridge/Routers
☐ 22. ☐ Hubs
☐ 23. ☐ Intelligent Hubs
☐ 24. ☐ Communications Servers

Involved / Plan to Purchase

A B **COMPUTERS/PERIPHERALS**

☐ 25. ☐ Micros/PCs
☐ 26. ☐ Minis
☐ 27. ☐ Mainframes
☐ 28. ☐ Pen-Based
☐ 29. ☐ Laptops
☐ 30. ☐ Workstations
☐ 31. ☐ Image Processing Workstations
☐ 32. ☐ Front-End Processors
☐ 33. ☐ Terminals
☐ 34. ☐ Printers
☐ 35. ☐ Cluster Controllers
☐ 36. ☐ Fax Machines
☐ 37. ☐ X-Terminals

A B **SOFTWARE/APPLICATIONS**

☐ 38. ☐ Network Management
☐ 39. ☐ Micro to Mainframe
☐ 40. ☐ Security
☐ 41. ☐ Communication/Terminal Emulation
☐ 42. ☐ Word Processing
☐ 43. ☐ Operating Systems
☐ 44. ☐ Business Applications (Finance/Mfg/HR)
☐ 45. ☐ Applications Development
☐ 46. ☐ Data Base Management
☐ 47. ☐ Spreadsheet
☐ 48. ☐ Groupware
☐ 49. ☐ EDI
☐ 50. ☐ E-Mail
☐ 51. ☐ Windows/Graphical User Interface
☐ 52. ☐ 4GL/Development
☐ 53. ☐ Multimedia
☐ 54. ☐ Graphics
☐ 55. ☐ Utilities

A B **WIDE-AREA NETWORK EQUIPMENT/SERVICES**

☐ 56. ☐ Modems (9.6K bps and over)
☐ 57. ☐ Modems (under 9.6K bps)
☐ 58. ☐ T-1
☐ 59. ☐ T-3
☐ 60. ☐ Fractional T-1
☐ 61. ☐ Data Switches
☐ 62. ☐ SMDS
☐ 63. ☐ ATM (Asynchronous Transfer Mode)
☐ 64. ☐ Matrix Switches
☐ 65. ☐ Packet Switches
☐ 66. ☐ Protocol Converters
☐ 67. ☐ Diagnostic/Test Equipment
☐ 68. ☐ DSU/CSUs
☐ 69. ☐ Microwave
☐ 70. ☐ Fax Boards/Modems
☐ 71. ☐ VSAT
☐ 72. ☐ Fiber Optic
☐ 73. ☐ Satellite
☐ 74. ☐ ISDN
☐ 75. ☐ PBXs (over 1000 lines)
☐ 76. ☐ PBXs (under 1000 lines)
☐ 77. ☐ Automatic Call Distributors
☐ 78. ☐ Voice Messaging Systems
☐ 79. ☐ Videoconferencing Systems
☐ 80. ☐ Voice Response/Processing
☐ 81. ☐ Switched Voice
☐ 82. ☐ Dedicated Leased Line
☐ 83. ☐ Switched Data
☐ 84. ☐ Centrex
☐ 85. ☐ E-Mail/On-Line Information
☐ 86. ☐ Image Processing
☐ 87. ☐ Audio Teleconferencing
☐ 88. ☐ Local Services
☐ 89. ☐ WATS MTs
☐ 90. ☐ International
☐ 91. ☐ Virtual Networks
☐ 92. ☐ Frame Relay
☐ 93. ☐ Value Added Services
☐ XX ☐ None of the above (1-93)

7 What is the total number of A: LANs B: Workstations/Nodes in your entire organization?

	LANs A		Workstations/ Nodes B
1.	☐	5,000+	☐
2.	☐	1,000 - 4,999	☐
3.	☐	100 - 999	☐
4.	☐	50 - 99	☐
5.	☐	10 - 49	☐
6.	☐	9 or Less	☐

8 Which of the following network platforms are currently installed/planned in the next year?

NETWORK ARCHITECTURES

Present Planned

☐ 01. ☐ SNA
☐ 02. ☐ DECNET
☐ 03. ☐ MAP/TOP
☐ 04. ☐ TCP/IP
☐ 05. ☐ DCA (Unisys)
☐ 06. ☐ X.25

Present Planned

☐ 07. ☐ NOVELL IPX/SPX
☐ 08. ☐ APPC/APPN/LU 6.2
☐ 09. ☐ NETBIOS
☐ 10. ☐ OSI
☐ 11. ☐ APPLETALK
☐ 12. ☐ OTHER________________________

LAN OPERATING SYSTEM

☐ 13. ☐ LOCALTALK (APPLETALK)
☐ 14. ☐ BANYAN (VINES)
☐ 15. ☐ DCA (IRMALAN)
☐ 16. ☐ DCA (10-NET)
☐ 17. ☐ IBM (LAN SERVER)
☐ 18. ☐ IBM (PC LAN PROGRAM)
☐ 19. ☐ MICROSOFT (LAN MANAGER)
☐ 20. ☐ UNGERMANN-BASS (NET/1)
☐ 21. ☐ NOVELL (NETWARE, 2.X, 3.X, 4.X)
☐ 22. ☐ PROTEON (PRONET)
☐ 23. ☐ SITKA (TOPS)
☐ 24. ☐ 3COM (3+, 3+OPEN)
☐ 25. ☐ ARTISOFT (LANTASTIC)
☐ 26. ☐ HAYES (LANSTEP)
☐ 27. ☐ DEC (PATHWORKS)
☐ 28. ☐ OTHER________________________

LAN ENVIRONMENT

☐ 29. ☐ 4M TOKEN RING
☐ 30. ☐ 16M TOKEN RING
☐ 31. ☐ ARCNET
☐ 32. ☐ ETHERNET
☐ 33. ☐ STARLAN
☐ 34. ☐ FDDI
☐ 35. ☐ LOCALTALK
☐ 36. ☐ 10BASE-T
☐ 37. ☐ OTHER________________________

OPERATING SYSTEM

☐ 38. ☐ DOS
☐ 39. ☐ UNIX/XENIX/AIX
☐ 40. ☐ OS/2
☐ 41. ☐ OS/2 2.X
☐ 42. ☐ MVS
☐ 43. ☐ VM
☐ 44. ☐ VMS
☐ 45. ☐ MACINTOSH
☐ 46. ☐ WINDOWS
N/A 47. ☐ WINDOWS NT
☐ 48. ☐ X WINDOWS
☐ 49. ☐ OTHER________________________

9 For which areas outside of the U.S. do you have purchase influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ None

10 Which of the following hardware platforms is installed/planned in your company? (check all that apply)

	Mainframes Currently Installed	Planned Next Year	Minis Currently Installed	Planned Next Year
01. DEC	☐	☐	☐	☐
02. IBM	☐	☐	☐	☐
03. AMDAHL	☐	☐	☐	☐
04. AT&T	☐	☐	☐	☐
05. BULL HNIS	☐	☐	☐	☐
06. DATA GENERAL	☐	☐	☐	☐
07. HP	☐	☐	☐	☐
08. TANDEM	☐	☐	☐	☐
09. UNISYS	☐	☐	☐	☐
10. OTHER____________	☐	☐	☐	☐

MICROCOMPUTERS
(fill in the numbers)

	NUMBER INSTALLED	NUMBER PLANNED NEXT YEAR
11. MACINTOSH 20, 30, 40		
12. MACINTOSH OTHER		
13. PCs BASED ON 80586	N/A	
14. PCs BASED ON 80486		
15. PCs BASED ON 80386		
16. PCs BASED ON 80286		
17. PCs BASED ON 8086/8088		
18. RISC / UNIX BASED WKSTNS		
19. OTHER		

11 Estimated value of networking equipment and services:

A. Which you helped specify, recommended or approved in the last year?

B. Which you plan to help specify, recommend or approve in the next year?

A B

☐ 1. ☐ $100 million and over
☐ 2. ☐ $50 - $99.9 million
☐ 3. ☐ $25 - $49.9 million
☐ 4. ☐ $20 - $24.9 million
☐ 5. ☐ $10 - $19.9 million
☐ 6. ☐ $5 - $9.9 million
☐ 7. ☐ $1 - $4.9 million
☐ 8. ☐ $500,000 - $999,999
☐ 9. ☐ $499,999 or less

12 Estimated gross annual revenue of your entire company/institution: (check one only)

1. ☐ Over $10 billion
2. ☐ $1 to $9.9 billion
3. ☐ $500 to $999.9 million
4. ☐ $100 to $499.9 million
5. ☐ $50 to $99.9 million
6. ☐ $10 to $49.9 million
7. ☐ $5 to $9.9 million
8. ☐ $4.9 million or less

13 Estimated number of employees for your entire corporation:

1. ☐ Over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ 499 or less

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DATA NET ARCHITECTURES

NETWORK ARCHITECTURES, DATA NETWORK EQUIPMENT, STANDARDS AND ENTERPRISE NETWORK MANAGEMENT

Worth Noting

> "The front-end processor is God's most expensive router."
>
> **Anthony Spielman**
> Director
> Internetworking product marketing
> Network Systems Corp.
> Fremont, Calif.

Data Packets

IBM last week announced it will develop a version of its popular CICS transaction processing software to run on Microsoft's Windows NT platform.

CICS for Windows NT will be compatible with other CICS implementations on OS/2 and Hewlett-Packard Co. machines. In addition, the product will support DOS, Windows and OS/2 clients.

Pricing and availability were not announced.

In related news, for a limited time, users can take 50% off the purchase price of IBM's Current OfficeVision program for the MVS, VM and Application System/400 platforms.

Orders must be placed before Oct. 31, and the installation date must be no later than Dec. 31.

IBM: (800) 426-2468.

Boca Research, Inc., located in Boca Raton, Fla., last week announced the Pocket Modem 96/24, a portable modem designed for laptop users.

The Pocket Modem supports 2,400 bit/sec data transmissions as well as 4.8K/9.6K bit/sec facsimile transmissions and is fully compatible with Hayes Microcomputer Products, Inc.'s modems.

The Pocket Modem comes with SofNet fax software for Windows and DOS personal computers. It is available now for $195.

Boca Research: (407) 997-6227. ◘

DEC unveils TeamLinks and All-In-1 extensions

Products to ease move from All-In-1 to TeamLinks.

By Jim Duffy
Senior Editor

ATLANTA — Digital Equipment Corp. last week expanded its TeamLinks groupware line with support for Apple Computer, Inc. Macintosh clients and DEC All-In-1 office system servers.

At the Digital Equipment Computer Users Society conference here last week, DEC also unveiled a new version of the TeamLinks for Windows client and announced a new packaging option for specific TeamLinks services.

TeamLinks is a suite of software products that give Microsoft Corp. Windows workstations access to work group electronic mail, conferencing, document handling and file browsing facilities via DEC Pathworks local-area networks and Mailworks messaging backbones.

The products, which were expected, are intended to facilitate the migration of DEC's five million All-In-1 office system users to TeamLinks (*NW*, June 7, page 4).

TeamLinks for Macintosh is also intended to extend TeamLinks abilities to a wider user base. Running on LAN-attached Macintosh clients, it allows Macintosh users to access X.400 mail, All-In-1 file services and TeamLinks file routing services.

TeamLinks for Macintosh includes TeamLinks Mail and TeamLinks Routing. The first allows users to configure Macintosh clients as X.400 message user agents, meaning they can exchange E-mail messages with other X.400 messaging system users through a DEC Mailworks server.

TeamLinks Routing allows Macintosh clients to access All-In-1 files on VMS-based servers and, after working on the file, route it to other TeamLinks users on the network. The product includes a template that allows users to specify the destinations of the file to be routed. It also contains password access to files, providing security and audit trail functions for tracking where the file has been and who has had access to it.

Next to mail, file routing is the most valuable function of groupware products because it is easy to cost-justify, said Steve Martin,

(continued on page 15)

Net/Master watches over Hitachi nets

By Michael Cooney
Senior Editor

RESTON, Va. — Systems Center, Inc. last week announced that it had ported its Net/Master family of network management products to Hitachi, Ltd. mainframes.

Net/Master will let Hitachi users manage and control their multivendor nets from a central location and develop customized network management applications using Net/Master's Network Control Language (NCL) software.

Systems Center, which has been working with Hitachi on the project for a year, now becomes the first independent software vendor to provide support for XNF, Hitachi's mainframe-based communications software for implementing Open Systems Interconnection-based networks.

Net/Master will run on Hitachi's VOS3 mainframe operating system and work in conjunction with NETM, Hitachi's proprietary network management system. Net/Master will manage non-Hitachi nets — such as token-ring or Ethernet local-area networks — linked to the mainframe, and NETM will manage the Hitachi-based nets.

Network Access

Systems Center's Network Access software will also be adapted to the Hitachi system. Network Access is mainframe-based software that controls security and allows multiple, simultaneous sessions with mainframe applications. It can be used in combination with NCL to automate mundane tasks, such as logging on and off different applications or navigating through complicated applications.

Also, Net/Master will be able to support the Hitachi 560/20

(continued on page 15)

Protocols supported by IBM 6611

Protocol	Token Ring	Ethernet	Frame relay	X.25	SDLC
TCP/IP	✓	✓	✓	✓	—
XNS	✓	✓	✓	F	—
IPX	✓	✓	✓	F	—
AppleTalk	✓	✓	✓	F	—
DECnet	✓	✓	✓	F	—
SNA	✓	✓	✓	✓	✓*
NETBIOS	✓	✓	✓	✓	F

F = Future

*PU 2 only

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: IBM, WHITE PLAINS, N.Y.

IBM spruces up 6611 with enhancements

SDLC and NETBIOS features to help smooth transition from SNA nets to router internetworks.

By Michael Cooney
Senior Editor

RALEIGH, N.C. — IBM has enhanced its 6611 router with SDLC and NETBIOS features that promise to make it easier for users to migrate their enterprise SNA nets to router-based internetworks.

With Release 1.1 of the 6611's Multiprotocol Network Program (MPNP), IBM also improved performance for Apple Computer, Inc.'s AppleTalk protocol.

The new release is available now for between $1,800 and $6,300, depending on which of the three router models it will run.

The new Synchronous Data Link Control support will let the router handle a direct point-to-point SDLC link to a Systems Network Architecture communications controller, such as the 3174, via the 6611's single V.24 interface at 4.8K to 38.4K bit/sec. The 6611 previously supported an SDLC link but only via a modem at a fixed speed.

IBM also added the ability to transport SNA or Network Basic I/O System traffic over Ethernet local-area networks through the 6611's Data Link Switching (DLSw) software.

DLSw, found in MPNP, is IBM's technology for routing SNA and NETBIOS traffic over Transmission Control Protocol/Internet Protocol backbones. Among its many features, DLSw on the 6611 prevents data flow congestion and ensures the timely delivery of SNA data across TCP/IP nets.

The new feature lets Ethernet-based devices send SNA or NETBIOS traffic between 6611s on the backbone. The remote 6611 can then forward the traffic onto an IBM Token-Ring or Ethernet LAN or to an SNA-based communications controller tied to the 6611 by an SDLC link.

IBM also enhanced the 6611's AppleTalk Phase 2 routing capabilities by moving most of the routing processing from the 6611's main processor onto the AppleTalk adapter. This lets the 6611's main processor more effectively handle predominant traffic such as SNA or TCP/IP.

> IBM "doesn't want SNA users looking elsewhere for routers," Tom Nolle said.

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The new feature will be available to users as a Program Temporary Fix, which is software code users can add to MPNP. It will be included as part of the operating system next year.

IBM also added improved AppleTalk filters that will let users more easily keep unnecessary AppleTalk polling traffic off the wide-area network.

Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J., said IBM is filling in missing pieces of its router strategy. "[IBM] doesn't want SNA users looking elsewhere for routers," he said.

Later this year, IBM is expect-

(continued on page 15)

DEC third-party software developer enhances two network products

Thruway and Thrunet target users moving to distributed LANs.

By Jim Duffy
Senior Editor

TOPSFIELD, Mass. — Software Partners/32, Inc., a 10-year-old developer of storage management software, last week unveiled a new version of its remote access package and expanded the number of platforms that can run its network data backup program.

The products, which were demonstrated at the Digital Equipment Computer Users Society conference in Atlanta last week, are aimed at users who are migrating from centralized, host-based networks to distributed local-area networks, including Unix workstations and servers.

> Thruway simplifies file backup, retrieval and printing in a distributed DECnet network by making remote disks, tapes and printers appear as if they are local.
>
> ▲▲▲

Using the Thruway

The company's Thruway remote device access software runs on Digital Equipment Corp. VAX and Alpha processors. It simplifies file backup, retrieval and printing in a distributed DECnet network by making remote disks, tapes and printers appear as if they are local.

This capability is expected to save users money by eliminating the need for storage devices and printers on remote LANs.

Version 2.6 of Thruway allows system managers to implement a backup schedule for remote devices, instead of manually backing up files. Once backed up, reserve copies of data can be stored centrally or distributed among multiple nodes to protect against catastrophic loss, Software Partners/32 said.

Thrunet upgrade

Software Partners/32 also enhanced its Thrunet package, which allows Unix users to back up and restore files to and from a DEC storage device or server using Unix commands. In addition, system managers at a centralized DEC console can initiate backups of remote Unix systems, eliminating the need for additional storage hardware on the Unix devices.

Version 1.1 of Thrunet, which runs on Unix machines, now supports Hewlett-Packard Co. HP-UX workstations and servers, and IBM RISC System/6000 workstations running the company's AIX operating system. Version 1.1 also supports two more Transmission Control Protocol/Internet Protocol stacks: Pathway from The Wollongong Group, Inc. and DEC's TCP/IP Services Version 2.0.

Thruway 2.6 costs $5,000 and is available now. Thrunet 1.1 is priced from $500 to $7,000, depending on network configuration, and is also available now.

Software Partners/32: (508) 887-6409.

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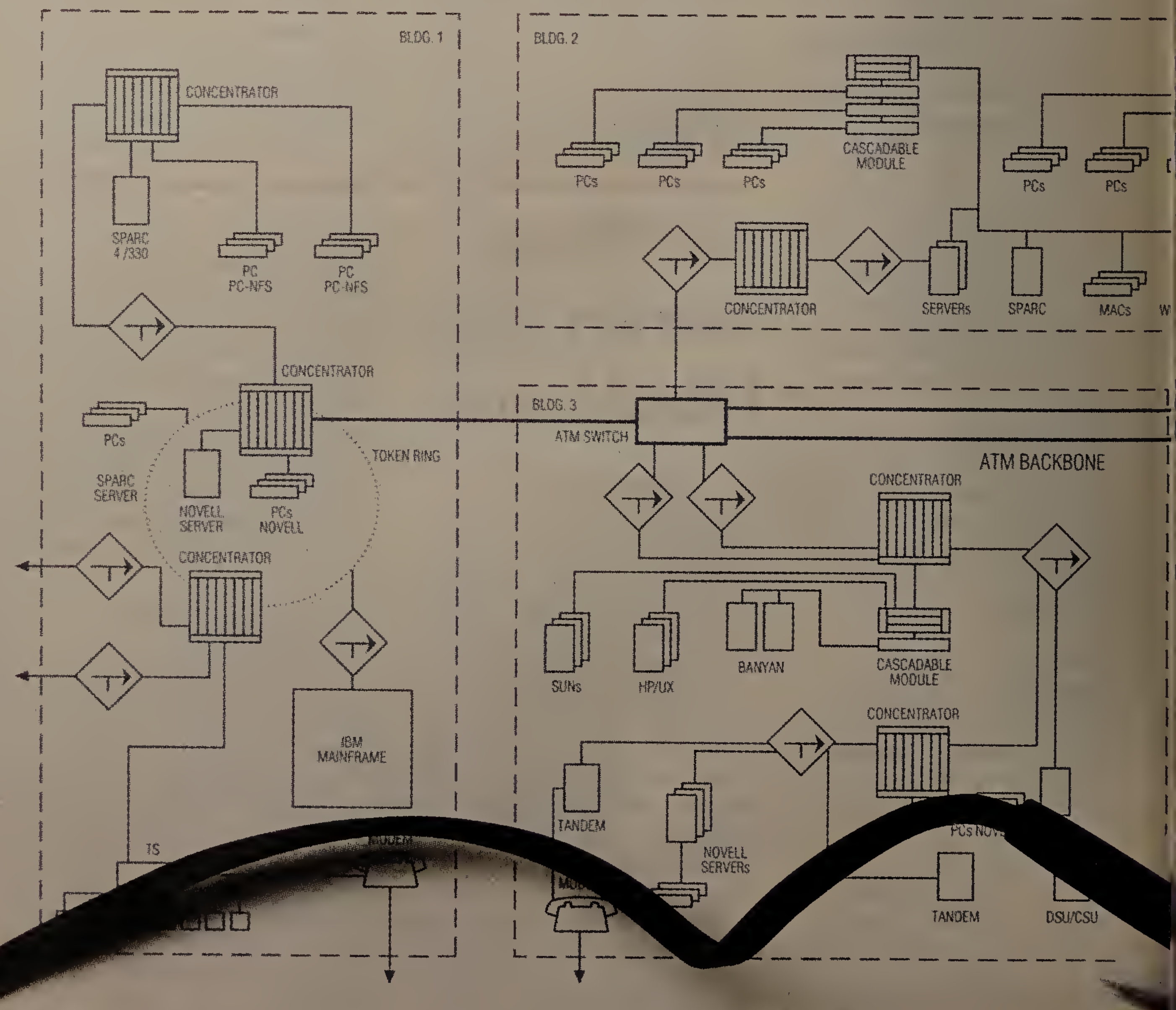

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Net/Master watches over Hitachi nets

continued from page 13

Kanji terminal, which supports the Japanese double-byte character set, and Hitachi's JSS4 software, which loosely couples multiple mainframe processors into a single complex.

Hachiro Kimura, president of Systems Center Japan, said the agreement will fill a gap in Hitachi's heterogeneous network and systems management products. It will be especially important in Japan, where Hitachi has a large installed base.

The software is available at a starting price of $52,000, based on processor size and software configuration.

Acquisition

Systems Center also noted that it expects its acquisition by Sterling Software, Inc., a stock-for-stock transaction announced April 1, to be completed by June 30. The acquisition will result in a combined company with nearly $400 million in annual revenue.

Systems Center: (703) 264-8200. ☒

IBM spruces up 6611 with enhancements

continued from page 13

ed to add other enhancements to the 6611 (*NW,* April 26, page 1).

For example, it will add support for SDLC-based links between the 6611 and local mainframes. Today, when a 6611 using DLSw receives a data packet from the WAN, it sends the packet up to the mainframe via a Token Ring-attached 3745 because SDLC is not supported.

IBM is also expected to add DLSw support for PU 2.1 devices linked to the router via SDLC lines. This feature is important for OS/2 or Application System/400 machines, which talk locally as PU 2.1 devices on Advanced Peer-to-Peer Networking nets but are forced to talk to a mainframe over an SDLC line as a 3270 device.

The new feature will let DLSw recognize the PU 2.1 device and let it begin communicating across the internet in the same way it does now with PU 2/3270 traffic. It will also obviate the need for SDLC-to-Logical Link Control 2 conversion devices.

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Circle Reader Service #2

TeamLinks, All-In-1 extensions unveiled

continued from page 13

DEC's manager of enterprise office solutions marketing. File routing reduces purchase order cycles and paper handling costs, he said.

But to route All-In-1 files, they must first be accessed from TeamLinks clients. That access is provided by Version 2.0 of the All-In-1 TeamLinks Connection Package, which is key to transforming the All-In-1 office system from a time-sharing terminal-to-host environment to a client/server-based system, Martin said.

All-In-1 TeamLinks Connection is a server-based code that allows All-In-1 file and mail servers to take instructions from personal computers instead of DEC VT terminals. All-In-1 user interface and application processing are now done on desktop PCs instead of All-In-1 servers, which currently handle mail and file services, according to Martin.

Windows clients can also access All-In-1 mail and file services via TeamLinks for Windows 2.0. Previously, TeamLinks for Windows clients only worked with DEC Mailwork servers. Additionally, the new version includes ease-of-use enhancements and can interoperate with the new TeamLinks for Macintosh software.

Lastly, DEC announced TeamLinks Office, software that runs on Windows and Macintosh clients and bundles the mail, routing and conferencing capabilities of TeamLinks. It does not include TeamLinks' document handling and data browsing features.

All-In-1 users are interested in TeamLinks and in All-In-1's transition to a client/server-based office system but are cautious.

"It sounds like it's going to be pretty good if it works," said Cathy Adams, a systems analyst for the U.S. Food and Drug Administration in Washington, D.C. "We would like to stay with All-In-1, but we're hoping to use PCs to create documents and All-In-1 to send them out. But I really need to sit down and look [at the enhancements]."

TeamLinks Mail for Macintosh and Windows clients costs $49. TeamLinks Routing for the Macintosh is priced at $80, while the Windows version costs $160. TeamLinks Office costs $270. All-In-1 TeamLinks Connection Package is included with All-In-1 server licenses.

The Macintosh products will be available in July, and the Windows software and All-In-1 TeamLinks Connection Package will be available in October.

DEC: (800) 344-4825. ☒

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Worth Noting

"Finding a single product that provides comprehensive network management and security is like trying to nail jelly to the wall."

Mark Gibbs
Technology analyst
National Computer
Security Association

Netnotes

Centrum Communications, Inc. last week announced new client software for its CentrumRemote remote network server, which enables remote access to a local-area network. The new client software is available at no charge with the San Jose, Calif., company's CentrumRemote server product, which costs between $3,495 and $6,295, depending on the number of ports supported. Upgrades are free.

Centrum Communications: (408) 894-1800.

Sonic Systems, Inc. last week released Bridge Series 3.0, upgraded software designed to link LocalTalk devices to Macintosh networks that use multiple networks. The Sunnyvale, Calif., company's $149 PowerBridge 3.0 connects a single device to the network. PowerBridge/TCP 3.0 costs $249 and permits connections to Transmission Control Protocol/Internet Protocol services. SuperBridge 3.0, which costs $249, can daisy-chain as many as 10 devices to a LocalTalk port. SuperBridge/TCP 3.0 adds TCP/IP connections for $349. The $199 LaserBridge 3.0 connects as many as 10 LocalTalk printers.

Sonic Systems: (408) 736-1900. ◘

Micropolis spans the RAID spectrum

Raidion LT for NetWare or OS/2 LAN Server:

Model	Maximum capacity (bytes)	Price	Minimum configuration (cost/M byte)	Maximum configuration (cost/M byte)
LT1120	17.36G	$6,225	$5.56	$3.84
LT2100	28G	$7,545	$3.59	$2.48

Raidion LS for NetWare or OS/2 LAN Server:

Model	Maximum capacity (bytes)	Price	Minimum configuration (cost/M byte)	Maximum configuration (cost/M byte)
LS2680	41.54G	$9,480	$3.54	$2.43
LS3500	54.25G	$11,715	$3.35	$2.30
LS4200	65.10G	$13,650	$3.25	$2.24
LS6040	93.62G	$16,980	$2.81	$1.93

GRAPHIC BY SUSAN J. CHAMPENEY SOURCE: MICROPOLIS CORP., CHATSWORTH, CALIF.

Micropolis and HP bring RAID to work group LANs

Intro wares aimed at small to midsize installations.

By Caryn Gillooly
Senior Editor

Micropolis Corp. and Hewlett-Packard Co. are bringing Redundant Array of Inexpensive Disks (RAID)-level fault tolerance to smaller network sites.

Micropolis this week will bring out new models in its low-end Raidion LT line of RAID data storage subsystems that will work in Novell, Inc.'s NetWare 3.11 and 4.0 environments. Earlier versions only worked within an IBM OS/2 LAN Server environment.

HP has released its first array for all major Extended Industry Standard Architecture-based personal computer local-area network servers running all major LAN operating systems, including NetWare 3.11 and 4.0.

Both products offer RAID Levels 0 through 5 fault tolerance and are aimed at small to midsize installations. A three-drive, 1G-byte fault-tolerant Raidion LT subsystem costs $6,225, while the HP Disk Array is priced at $8,849. Previously, neither company offered a product for low-end NetWare environments, for example, for less than $10,000.

"The increasing number of small companies and corporate departments migrating to Novell LANs need a fault-tolerant data storage solution that is small enough for the workplace," said Holly Sacks, director of product management at the Storage Systems Division of Micropolis, here.

Nitty-gritty

The new Micropolis LT1120 and LT2100 are hardware/software combinations that include 3.5-in. drives and the company's RaidWare NetWare Loadable Module. Like the existing LT offerings for OS/2 LAN Server nets, the new NetWare LT models are modular, letting customers expand the subsystem capacity one module at a time, from 500M to 28G bytes.

Both Micropolis' LT line and its higher end LS line boast hot-swappable capabilities for drives and power supplies, on-line spares, the option to connect to multiple hosts and more.

> The HP array also offers hot-swappable and hot-spare capabilities.
>
> ▲▲▲

In addition to the LT release, Micropolis this week is expected to add OS/2 LAN Server connectivity to its LS line, which previously only ran within a NetWare environment.

The HP Disk Array is also a hardware/software combination that runs within Banyan Systems, Inc.'s VINES for SCO Unix, IBM's OS/2, Microsoft Corp.'s Windows NT, NetWare 3.11 and 4.0, The Santa Cruz Operation, Inc.'s SCO Unix and other environments.

The HP array also offers hot-swappable and hot-spare capabilities in addition to other, more advanced features such as automatic failure detection and user notification.

Micropolis: (818) 709-3300; HP: (800) 826-4111. ◘

HP subnotebook ready for wireless

Offers OmniBook 300, with infrared links, to bridge the gap between network and portable computing.

By Fredric Paul
Senior Editor

SAN FRANCISCO — Hewlett-Packard Co., with support from Microsoft Corp., last week introduced the OmniBook 300, a unique and powerful subnotebook computer complete with technology for instant wireless communication with other PCs, networks and printers.

Lew Platt, HP's president and chief executive officer, said the integration of computing, communications and consumer electronics is one of the most significant trends of the 1990s, and the OmniBook 300 is designed to ride that trend with an array of communications capabilities.

The 2.9-pound machine includes a built-in Serial Infra-Red (SIR) communications port and Traveling Software, Inc.'s new LapLink Remote Access software designed to help bridge the gap between network computing and portable computing.

The low-powered, bidirectional optical transceiver hardware and the file-transfer software work together to create the equivalent of a two-node peer-to-peer wireless network operating at a respectable 115K bit/sec. With SIR, users can go beyond plug-and-play connections, said Frank Cloutier, general manager of HP's Corvallis, Ore., division, which produces OmniBook. "You just play," he said.

To make an SIR connection, users simply point the back of the OmniBook toward another SIR-equipped machine. Currently, that means another OmniBook, an HP LX 100 hand-held computer, an HP Vectra XM desktop machine or a printer equipped with an optional JetEye SIR port from Extended Systems in Boise, Idaho. Optional SIR ports may soon be available for connection to any desktop or personal computer, or directly to the network.

Once the SIR port makes the connection, LapLink Remote Access offers a constant, local-area network-like connection with the

(continued on page 20)

Quick Restore lets users back up locally, remotely

By Christine Burns
Staff Writer

AMHERST, N.H. — Officials at Workstation Solutions, Inc. expect to speed up restoration of files on Unix workstation networks by as much as 50% with the company's Quick Restore (QR) backup software, which was announced last week.

QR enables users to locally or remotely control backup and file restoration and combines an on-line index, an automatic volume location feature and direct-to-block positioning support, an advanced tape drive capability that supports swift movement to desired files on a tape device.

The product supports Workstations Solutions' nonproprietary TAR++, a backup capability based on Unix and IEEE data archiving standards. It allows users to read backup data on any Unix host within a multivendor network without using Network File System.

"They're providing a solution that allows companies to really manage the backup and restore process across workstation LANs," said Cheryl Hetrick, senior industry analyst with the Newton, Mass.-based consultancy Business Research Group. "Where people would normally have to do backup solutions [on-site], their product allows you to do that centrally."

QR software is available for all 4mm and 8mm tape drives, optical drives and robotic media handlers, and supports Unix platforms from Auspex Systems, Inc., Digital Equipment Corp., Hewlett-Packard Co., IBM, Silicon Graphics, Inc. and Sun Microsystems, Inc.

(continued on page 20)

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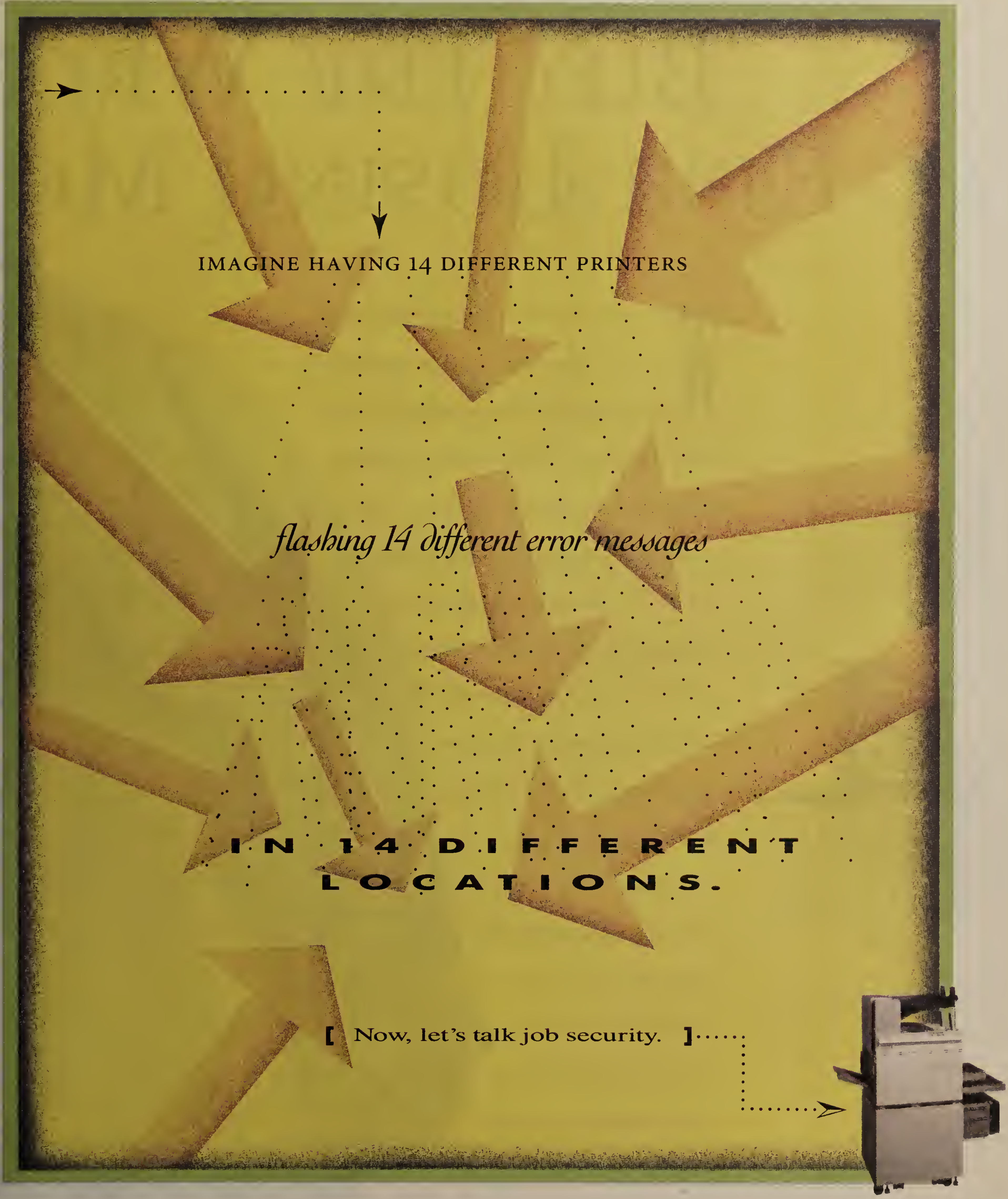
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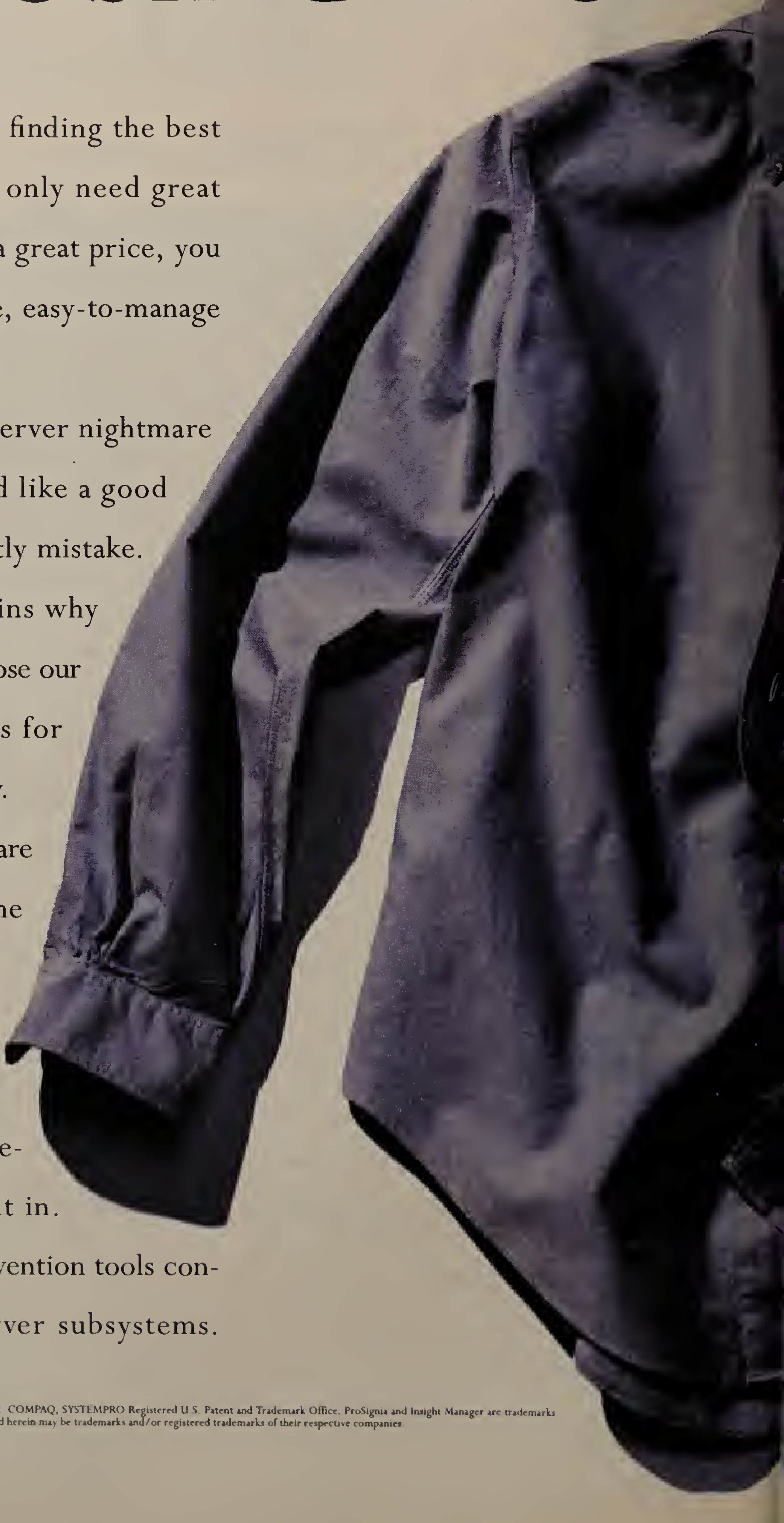

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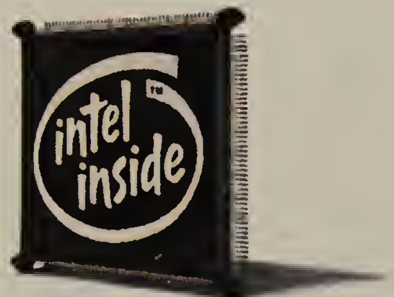

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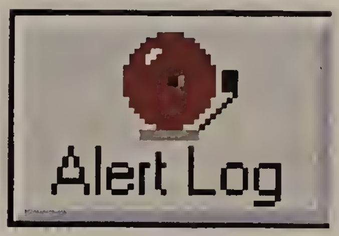

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Circle Reader Service #15

HP subnotebook ready for wireless

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other device, allowing drag-and-drop exchange of files using Windows' File Manager. Users can also directly access files from within Windows applications on either machine. In addition, LapLink provides seamless access to all network drives available from the linked PC.

"We think SIR addresses a critical need in portable computing," said Bob Frankenberg, vice president and general manager of HP's Personal Information Products Group. To extend SIR's usefulness, HP plans to widely license the technology, charging only a nominal onetime fee to cover administration costs.

In addition to LapLink Remote Access, the OmniBook also comes with built-in versions of Microsoft Corp.'s Word for Windows 2.0 and Excel 4.0, as well as HP's personal information manager software. An optional communications package adds special versions of Microsoft's Mail Remote Version 3.2 remote electronic mail client, Delrina Technology Corp.'s WinFax Lite and FutureSoft Engineering, Inc.'s DynaComm terminal emulation, as well as an internal 9600/2400 facsimile/modem card.

Unlike any other machine on the market, the OmniBook stores these applications, as well as its systems software, in read-only memory. The software runs directly from ROM, which saves mass storage space, speeds performance, cuts power consumption and reduces random-access memory requirements. It also lets the OmniBook boot up instantly, a key consideration for mobile use.

Powered by a 20-MHz 386SXLV processor from Advanced Micro Devices, Inc., the OmniBook 300 features 2M bytes of RAM (expandable to 8M bytes), either a 40M-byte hard drive or a 10M-byte SunDisk flash disk, and one or two Personal Computer Memory Card International Association Type II expansion-card slots, depending on whether the hard drive or flash disk is used. It features a full-size keyboard, a cleverly designed pop-out mouse and a non-backlight 9-in. VGA screen. The OmniBook runs for five to nine hours per charge on its nickel-metal-hydride batteries. In a pinch, it will also work on four AA batteries. The OmniBook 300 also includes standard 9-pin serial and 25-pin parallel ports.

The HP OmniBook 300 is available now for $1,950 with a 40M-byte disk drive and $2,375 with a 10M-byte flash disk. The Fax/Modem Communications Pack costs $379. Extended Systems' JetEye SIR printer port will ship this summer for $159. The current version of LapLink Remote Access is available only to OEMs, with a retail version planned for later release.

HP: (800) 443-1254; Extended Systems: (208) 322-7575. ◻

Quick Restore backs up locally, remotely

continued from page 16

QR users can add on an OSF/Motif-compliant windowing interface, which streamlines data recovery. In basic mode, it allows end users to quickly locate and restore lost files. If the physical device and media required for restoring are not accessible, the system automatically sends a fully specified request using electronic mail to the operators. A so-called power mode handles more complex requests, which may involve multiple systems, hosts and time ranges.

> A so-called power mode handles more complex requests, which may involve multiple systems.
>
> ▲▲▲

A Library Management module provides a sitewide view of all media volumes and devices by tracking volume contents and the volume set relationships formed during multivolume backups. The Media Handler module helps users control tape access and manipulate tape among devices and storage locations.

While memory requirements vary based on which add-on modules are included, QR's core requires 200K bytes of memory per server.

The base price of QR is $2,950 per server, while the graphical user interface software is $1,250 per server. The library management and media handler capabilities are packaged together ranging in price from $850 to $4,950. All products are currently available.

Workstation Solutions: (603) 880-0080. ◻

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Circle Reader Service #4

INTERNETWORKS

LAN-TO-LAN AND LAN-TO-WAN EQUIPMENT AND STRATEGIES

Worth Noting

> "We all watched *The Jetsons* as kids. We just have to hope that our boss is not like Mr. Spacely."

Mark Juliano
Director of product marketing
Fore Systems, Inc.
Pittsburgh
Commenting on desktop
videoconferencing made possible
by ATM

Link Notes

3Com Corp. this week will announce that it has added **Synernetics, Inc.**'s Reduced Instruction Set Computing-based Ethernet Switching Module to its LinkBuilder 3GH hub line.

The module, which switches and bridges data at 50,000 packet/sec, is available now and comes in three versions, which range in price from $12,500 for the eight-port 10Base-T and four-port attachment unit interface models to $14,000 for the eight-port fiber device.

Shiva Corp. will hold a series of free seminars this month to help educate users about tying remote sites and telecommuters to corporate internetworks.

Seminars will be held this week in Seattle and Portland, Ore., and next week in Chicago and Minneapolis.

Shiva: (800) 828-2754.

Fibermux Corp. last week rolled out the FX255, a multimode-to-single mode Fiber Distributed Data Interface transceiver that extends the FDDI distance limitation from 2 to 45 km. The single-attached version costs $5,700, while the dual-attached version is priced at $9,300. Both are available now.

Fibermux: (818) 709-6000.

Configuration switching tops LANNET's rollout list

New Ethernet modules, mgmt. upgrades debut.

By Skip MacAskill and Maureen Molloy
Network World Staff

HUNTINGTON BEACH, Calif. — LANNET Data Communications, Inc. has announced a series of products for its MultiNet intelligent hub line that provides dynamic net configuration and better management capabilities.

Joining a select group of vendors that includes Bytex Corp., Chipcom Corp., Optical Data Systems, Inc. and Xyplex, Inc., the company rolled out two new hub modules that provide per-port configuration switching capabilities for Ethernet environments.

The 10Base-T LE-140XTQ and LE-140XTQC modules, which feature 10 RJ-45 ports and a 50-pin telephone company-style connector, respectively, let managers assign any port on a module to any one of the four Ethernet backplanes supported by the hub. The switching can also be done on a per-module basis.

This type of capability lessens the headaches of moves, adds and changes by enabling a user to move to a new physical location but stay on the same network. The net manager makes the change logically via LANNET's MultiMan Simple Network Management Protocol-based net management software, avoiding time-consuming trips to the wiring closet.

The net manager can also utilize the capability to manually load-balance the network if an Ethernet segment becomes bogged down or overloaded.

Available now, both modules, which support shielded and unshielded twisted-pair connections, cost $2,195 each.

(continued on page 27)

UB ups net mgmt. with new apps

By Skip MacAskill
Senior Writer

SANTA CLARA, Calif. — Ungermann-Bass, Inc. last week beefed up its NetDirector management system with the introduction of a trouble-ticket application and the formation of the NetDirector Solutions Program, which is designed to ease integration of third-party products into NetDirector.

UB will work with Networx, Inc. to integrate that company's Paradigm automated trouble-ticket application into both the Unix and OS/2 versions of NetDirector. Paradigm combines trouble ticketing with inventory management and fault detection, as well as resolution capabilities.

It works with common management platforms, filtering Simple Network Management Protocol traps collected by the platform, analyzing the raw data and generating incident reports.

"Because users are trying to manage networks that are larger and more complicated with budgets that are flat, they're asking for automated tools," said Gordon Smith, manager of third-party programs at UB. "Networx was a good fit because they are focused on managing the same complex networks."

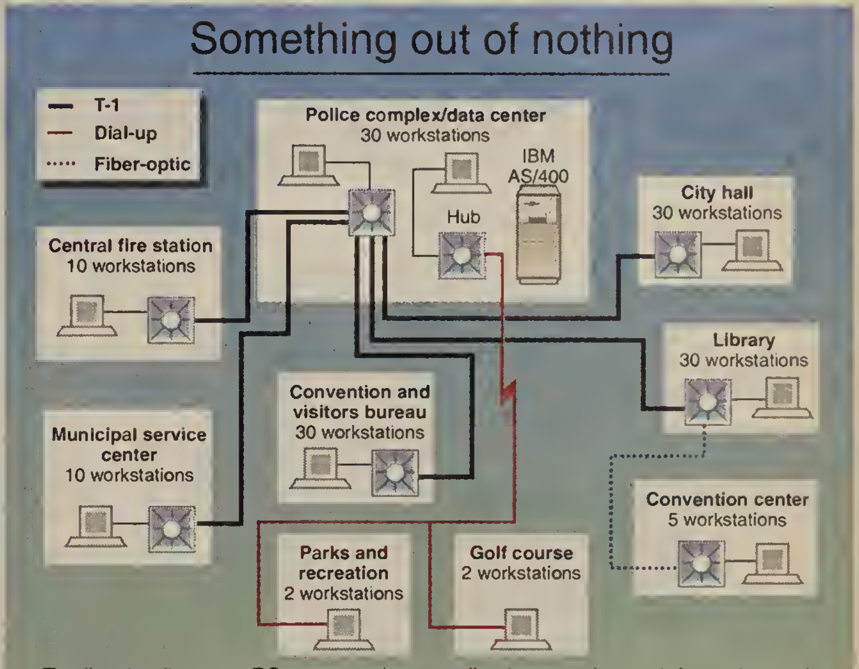
Paradigm will complement other applications currently supported by NetDirector, such as the Network Control Series (NCS) from ProTools, Inc., which provides Remote Monitoring and analysis features.

In a typical management scenario, NCS would detect a threshold violation and report it to NetDirector. Paradigm would pick it up from there, prioritize the alarm, generate an incident report and notify appropriate personnel.

"There is nothing unique here," said Cheryl Hetrick, an analyst with Business Research Group, a consultancy in Newton, Mass. "UB is responding to what the market is demanding and filling gaps [in] current management offerings via the partnership route."

Paradigm, integrated with the Unix version of NetDirector, is available now and costs between $10,900 and $16,500, depending on configuration. The NetDirector for the OS/2 version of Paradigm is scheduled for release

(continued on page 27)



To allow its disparate PC users to share applications, exchange information and conduct city business more efficiently, the city of Grapevine, Texas, installed a hub-based internetwork.

GRAPHIC BY TERRI MITCHELL SOURCE: CHOICE SOLUTIONS, INC., COLLEYVILLE, TEXAS

Internet lets users tap into 'grapevine'

Hub-based net allows employees to exchange data, provide better service to city residents.

By Skip MacAskill
Senior Writer

GRAPEVINE, Texas — When John Jennery realized that Grapevine's scattered, stand-alone processing resources were not meeting the needs of the growing user community, he turned to a hub-based solution to answer the call for connectivity.

"We were basically in a network wasteland," said Jennery, Grapevine's data processing coordinator. "We had 80 PCs scattered about the city that weren't connected in any cohesive fashion, so people couldn't communicate, share files or exchange information in a timely manner."

Since there was essentially no installed base or investment to protect, the city found it easier to implement a hub-based internet to link its nine city buildings, which lie within a 10-mile radius.

"We weren't encumbered with a lot of old technology, so we could start with the basics and work from there," he said. "The mission was straightforward in that we wanted to link our users across the city and provide an upgrade path for the future as the city and its need to provide services grew."

The city decided to base the network on NetWorth, Inc.'s six-slot Series 4000 intelligent hub. "A hub approach allows us [to] meet two of our criteria in terms of making the net easier to manage and provide scalability for future needs."

Grapevine installed two 4000s at the police complex, which acts as the city's data center, and one each at city hall, the library, the convention and visitors bureaus, the central fire station and the municipal service center (see graphic, this page). In addition, the city installed a nine-port NetWorth MicroHub at the convention center.

Desktops are tied to the hubs via 10Base-T unshielded twisted-pair Ethernet connections, and T-1 facilities are used for inter-building hub links. In addition, the convention center is linked to the library via fiber that has been strung across telephone poles. The two users at the parks and recreation department and the two users at the city golf course employ dial-up 14.4K bit/sec lines to access the data center.

The 4000 was chosen largely because of the NetWare Application Engine (NAE), a two-slot module that allows the hub to double as a local-area network server supporting a variety of Novell, Inc. NetWare services. The module also comes equipped with three slots for optional daughterboards that support internetworking capabilities such as routing.

(continued on page 27)

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Circle Reader Service #5

GLOBAL SERVICES

DOMESTIC AND INTERNATIONAL VOICE/DATA SERVICES, ACCESS EQUIPMENT AND REGULATORY ISSUES

Worth Noting

> "We don't think that showing up late in the network management arena is bad because we get to learn from other [carriers'] strategies."

Bill Branch
Group manager
Sprint Data Group
Kansas City, Mo.
Commenting on Sprint Corp.'s plans for a customer-operated network management system for voice and data services

Carrier Watch

Top **Sprint Corp.** officials last week discussed plans for a family of fractional T-3 services as well as a discount plan for dedicated access.

Howard Stern, director of market development for **Sprint Data Services,** said the fractional T-3 services will be packaged with enhanced features. These will differentiate them from AT&T's services, announced earlier this year, which run at 4.6M, 6.2M, 7.7M and 10.8M bit/sec.

Stern would not provide details about the new features or the services, which will be rolled out by early next year.

Melodie Reagan, product manager for Clearline services, Sprint's dedicated offerings, said the carrier will soon announce a plan that offers discounts to companies if they buy bulk dedicated access under long-term contracts from Sprint. MCI Communications Corp. and AT&T have already announced such plans.

The MCI and AT&T plans offer discounts of more than 20% for firms that sign five-year term plans.

And contrary to claims of many industry analysts, Sprint maintains that it has lost few private-line customers to its own — and other carriers' — public frame relay service. ☑

Teleport, cable firms team to widen bypass services

Teaming with 11 firms to offer alternative access.

By Bill Burch
Washington Correspondent

SAN FRANCISCO — Teleport Communications Group, Inc. last week said it will work with 11 cable television companies to build alternative access networks in five cities and expand existing Teleport networks in eight cities.

New networks will be constructed in Detroit, Miami, Phoenix, Providence, R.I., and St. Louis, while network expansions are planned in Boston, Chicago, Dallas, Houston, Los Angeles, Seattle, San Diego and San Francisco. Teleport will be handling the construction, sales and administration for the nets.

The partnerships will give Teleport access to the cable companies' existing fiber networks for the alternative access and private Centrex services the carrier offers in competition with local telephone companies.

Through the ventures, Teleport will be able to dramatically increase the size of its networks, which currently extend between 10 and 50 route miles in length. The new rings are expected to be hundreds of miles long, vastly increasing the number of buildings the carrier can serve.

Teleport will own 35% of the joint ventures, with the cable companies owning the remaining 65%.

To date, Teleport has signed letters of intent for joint ventures with its current owners: Comcast Corp., Continental Cablevision, Inc., Cox Enterprises, Inc. and Tele-Communications, Inc. It is also teaming up with some new partners: Cablevision Industries Corp., Crown Media, Inc., Hyperion Telecommunications, Inc., InterMedia Partners, Maclean Hunter Cable TV, Times Mirror Cable Television and Viacom Cable. Teleport and the cable companies expect to close their deals during the next couple of months.

The deal provides a quick jolt of network expansion to Teleport

(continued on page 24)

Bellcore sets frame relay specifications

By Bob Wallace
Senior Editor

MORRISTOWN, N.J. — Bell Communications Research last week announced new specifications designed to enable local and long-haul carriers to offer a common portfolio of frame relay service features.

Bellcore said its work complements that of the Frame Relay Forum, a consortium of users, carriers and vendors that has already hammered out implementors' agreements for a variety of basic service features.

"The forum has covered 80% to 90% of the items that users and carriers want in order to support service interoperability," said Ken Politz, frame relay product manager for Bellcore. "We're just filling in the rest."

One such item is the Frame Relay Forum's network-to-network interface, which specifies how local and long-distance carriers link frame relay nets at T-1 speeds. The Bellcore document adds a specification for T-3 interconnection.

Politz claims that there is no completed specification that delineates how carriers support the committed information rate (CIR) or how users can burst beyond CIR, which is the minimum bandwidth on a permanent virtual circuit.

ANSI's existing frame relay standard lists CIR as an optional capability. However, the Bellcore documents would define CIR and establish it as a standard feature.

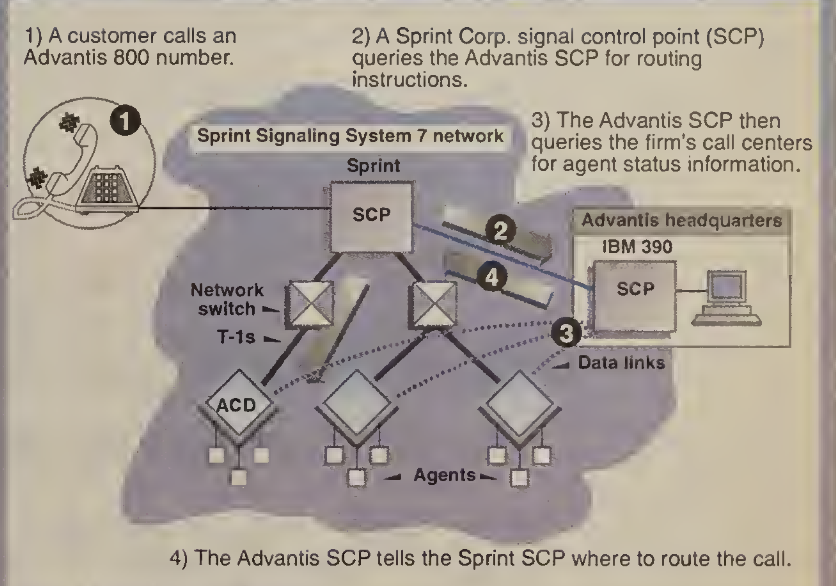
According to Politz, Bellcore has suggested moving from a 1,600-byte frame relay frame size to a 4.096K-byte frame. The Bellcore documents also specify how frame relay service will be supported over Asynchronous Transfer Mode networks.

Bellcore said the top long-haul carriers as well as the local telephone company units of the regional Bell holding companies that own it have endorsed these documents.

"These are really tweakings, not major overhauls," Politz said. ☑

Advantis links to Sprint SS7 net for advanced call routing

An Advantis processor collects status data from call centers and instructs the Sprint network where to route each incoming 800 call.



1) A customer calls an Advantis 800 number.

2) A Sprint Corp. signal control point (SCP) queries the Advantis SCP for routing instructions.

3) The Advantis SCP then queries the firm's call centers for agent status information.

4) The Advantis SCP tells the Sprint SCP where to route the call.

ACD = Automatic call distributor

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: ADVANTIS, SCHAUMBURG, ILL.

Advantis forges link to Sprint's SS7 net

Firm will use the link to route 800 calls to the first available agent at any of 10 far-flung call centers.

By Bob Wallace
Senior Editor

SCHAUMBURG, Ill. — Advantis last week said use of a direct link to Sprint Corp.'s Signaling System 7 (SS7) net has improved customer service at call centers nationwide, boosted agent productivity and sharply reduced call abandonment rates.

The SS7 network linkage enables Advantis to dynamically reroute 800 traffic from overloaded sites to available agents at any of the call centers it operates for Sears companies.

"Right now, we can get each incoming call to the call center that's best available to handle it," said Henry Reynolds, director of development for network transport services at Advantis. "That gives us a world-class load-balancing process."

Balancing huge volumes of calls among 10 call centers was difficult at best before Advantis became the first user to forge a link to the Sprint SS7 network. Each call center is supported by 23 T-1s and has about 500 agents.

In the past, the Advantis staff and a Sprint technician at the user site monitored the condition of call centers and, if a site was swamped, the technician used a personal computer to direct Sprint switches to route inbound calls to another center. But if changes overloaded the alternate site, calls sat in queues there.

"When we moved incoming calls away from a swamped center to a second, we often put that site in trouble and had to pass traffic to a third site," Reynolds said. "This had a cascading affect. The average number of calls in queue would skyrocket, and people would hang up."

In fact, it was so difficult to match call volumes with available agents that Advantis had to make between 80 and 120 moves a day to maintain its service levels.

Advantis considered installing dedicated lines between call centers to better handle overflow calls but could not justify the links.

Advantis and Sprint decided that Advantis needed to use the intelligence in the carrier's network to improve call routing.

Today, Advantis relies on an IBM 390 mainframe, which acts as a signal control point (SCP) to poll Rockwell International Corp. Rockwell Galaxy or Rolm 9751 automatic call distributors in its call centers for status messages (see graphic, this page). The messages indicate how many agents are logged on, how many

(continued on page 24)

Advantis forges link to Sprint's SS7 net

continued from page 23

are available and the average speed of answering.

When an 800 call is placed to Advantis, a Sprint SCP queries the IBM host here over an X.25 link and tells Sprint where to route the call.

But before taking the project live, Advantis worked with Sprint to test the process, which the carrier had never supported before.

"We ran the process with a Sprint test network that simulated a call center environment," Reynolds said. "We did this [in part] because Sprint had to write some special code for their SCPs to support the project."

There were no problems during the test period, so Advantis scheduled the process to begin on a Wednesday, a light day for the call centers.

"We started by having 10% of our calls routed using the on-site processor," Reynolds said. "But it got to the point where it worked so well that we decided to turn the whole system into production the first day."

The system provided a 700% return on investment in one year and enabled Advantis to better match staffing with call volumes, manage calls more efficiently and level out the service across the network, he said.

In addition, the system has improved customer service by 7%, increased agent productivity by 6% and cut call abandonment by 54%.

"For example, during the Christmas season, [we] used to add agents, but that still wasn't enough. [We] had agents work overtime," Reynolds said. Now, the company no longer needs extra staff to handle seasonal call volumes. "Savings have come from eliminating additional staff and overtime pay."

Reynolds gave Sprint high marks for service and support.

"We worked very closely with Sprint on this project, and they were very responsive to our needs," he said. "It was the level of cooperation between Advantis and Sprint that made it possible for us to get [the system] into full production so quickly." ◘

Firms team to widen bypass services

continued from page 23

and gives the cable companies a solid foothold in the network market. Although the cable companies have disavowed any interest in providing long-distance service, they've long-planned to pool rights-of-way for alternative networks, said Richard Tomlinson, an analyst with Connecticut Research in Glastonbury, Conn.

The cable companies give Teleport an access alternative to the local operating companies, which have been loath to cooperate with competitors such as Teleport. Competitive access providers may be able to pass on cable companies' lower transport rates to users, said Steve Sazegari, an analyst with Ryan, Hankin and Kent, Inc. in San Francisco.

> The cable companies give Teleport an access alternative to the local operating companies.
>
> ▲▲▲

Teleport's first joint venture with a cable company was a fiber ring built in Omaha, Neb., with Cox Cable. After signing that deal in February, the companies brought a new 140-route-mile ring on-line in March.

That kind of speed can be expected for the new fiber rings, as well, according to a Teleport spokesman. The carrier expects to have all the networks on-line by the end of the year.

One factor speeding network development is that many of the cable companies already have fiber in place and need only the appropriate electronics in order to go on-line. A case in point is the project in San Diego, where Teleport and Cox have again partnered. Although that fiber ring is still under construction, Teleport has already signed up a customer for point-to-point service in the city.

Currently, Teleport has 10 rings in operation. Eight of those are planned for expansion in the joint ventures, and Omaha, the ninth, is covered by the previous deal with Cox. That leaves only Teleport's ring in New York to be married off. With a substantial network already in place in that city, Teleport may be keeping its original base of operations for itself.

Teleport: (718) 983-2000. ◘

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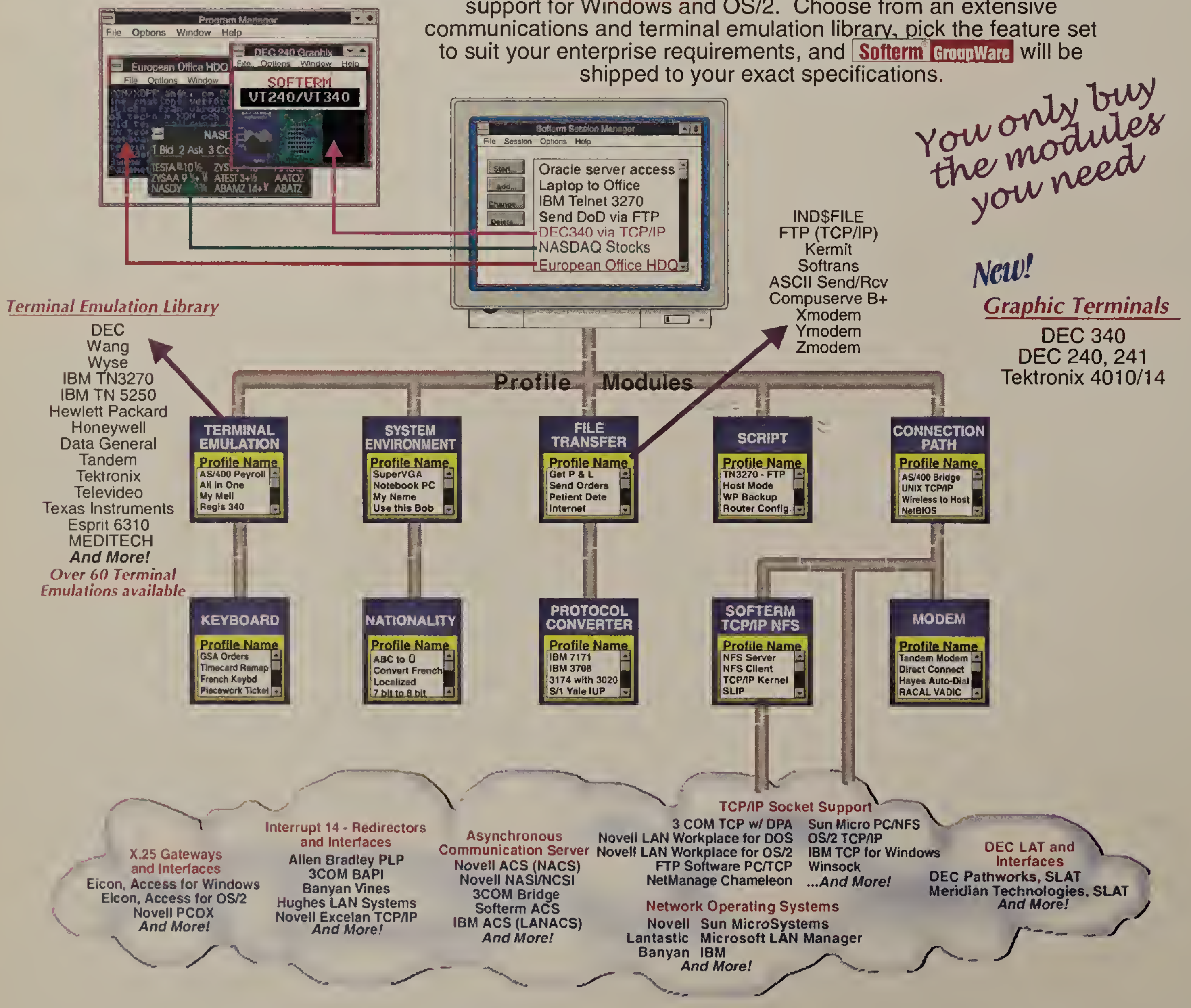

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Circle Reader Service #7

ENTERPRISE APPLICATIONS

CLIENT/SERVER AND ENABLING SOFTWARE: DISTRIBUTED DATABASE, MESSAGING, GROUPWARE AND IMAGING

Worth Noting

> "Any mature operation is going to move slowly to implement [client/server] products. The realities of changing existing platforms, networks and servers, and reeducating end users bogs the process down."
>
> **Jim Daly**
> Director of human resources administration
> New England Telephone
> Boston

Store & Forward

Neuron Data, Inc. this week will unveil an enhanced version of its cross-platform graphical user interface (GUI) builder, Open Interface Elements, and a new cross-platform database access tool.

Open Interface Elements now contains an optional scripting language that allows developers to use simple English commands to attach behaviors or commands to GUI objects instead of writing C code.

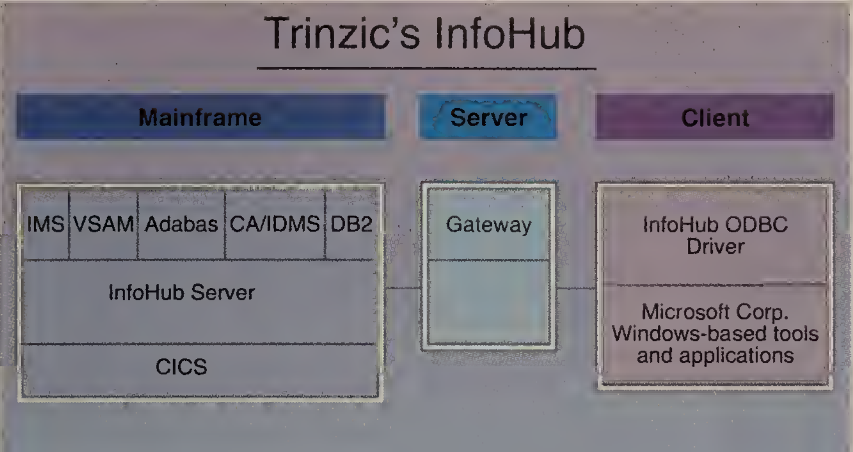
The data access tool, called C/S Elements, provides access to Oracle Corp. and Sybase, Inc. relational database mangement systems from more than 35 client platforms, including Unix, OS/2 and Windows NT.

The products cost $4,850 and $5,500, respectively, and will ship this summer.

Neuron: (800) 876-4900.

Walker Richer & Quinn last week announced a software developers' kit (SDK) that frees developers from designing and developing communications links between cli-

(continued on page 27)



ODBC = Open Database Connectivity

Trinzic's InfoHub ODBC Driver takes requests from Windows applications and brings them up to a gateway, which forwards the request to CICS on the mainframe. Once a CICS program is invoked, InfoHub grabs the data it needs from the appropriate mainframe databases and returns it to the client.

GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: TRINZIC CORP., WALTHAM, MASS.

Trinzic to provide legacy data access via InfoHub

Pack lets Windows users access IBM mainframes.

By Bob Brown
Senior Editor

PALO ALTO, Calif. — Trinzic Corp. last week introduced InfoHub, a software offering designed to enable Microsoft Corp. Windows-based applications and query tools to access legacy databases on IBM mainframes.

The product is targeted at users moving to client/server environments that still need access to host-based data, said Larry Harris, chief technology officer at Trinzic.

"We're finding that many users are building their new applications on client/server platforms but are leaving old applications on hosts," he said. "Users need a way of accessing that host data."

InfoHub makes the host-based nonrelational data appear to be relational. The Microsoft Open Database Connectivity (ODBC)-compliant product consists of client and server components.

The InfoHub ODBC Driver resides on the client and provides a common interface for accessing all databases. The driver collects SQL requests from Windows applications, processes them and then forwards the requests to a database gateway.

Initially, InfoHub will support Micro Decisionware's Database Gateway, but it will support others down the road, Harris said.

The gateway delivers the data to the CICS, where it is then transferred to the InfoHub Server, which has its own address space and processes the request. The server maps the request to the appropriate mainframe databases and sends data back to the requesting client.

InfoHub initially will support sequential files and the following databases: Computer Associates International, Inc.'s CA/IDMS, IBM's IMS, VSAM and DB2, and Software AG of North America, Inc.'s Adabas.

According to Fred Lizza, vice president of marketing at Trinzic, InfoHub complements Trinzic's InfoPump product, which was obtained in the acquisition of Channel Computing, Inc. in March. InfoPump routes data between relational databases, but integrated with InfoHub, can provide users with access to both relational and nonrelational data, Lizza said.

Users can use InfoPump and InfoHub to build data warehouses, among other resources, he added.

Andrew Ware, a product analyst at International Data Corp., a Framingham, Mass., market research firm, said there should be demand for InfoHub given the trend towards downsizing and the need to allow access to existing data.

Ware expects the Trinzic offering to compete with Information Builders, Inc.'s Enterprise Data Access/SQL offerings as well as other emerging products.

InfoHub is in beta test and will be generally available in September. It will cost $50,000 to $75,000.

Trinzic: (617) 891-6500. ◻

Tools emerge for multiple E-mail sites

Smaller companies are getting the call to provide products for managing enterprise mail systems.

By Bob Brown
Senior Editor

The fact that local-area network electronic mail packages lack full-fledged management tools is forcing a growing number of E-mail administrators to seek third-party software to address this problem.

While some users have built their own E-mail management systems, others have turned to small companies, such as Baranof Software, Inc. of Brighton, Mass., and Automated Business Solutions, Inc. (ABS) of Columbia, Mo.

Products from these and other vendors enable users to manage E-mail systems across an enterprise, track network loads and determine whether messages are getting to their desired destination, among other things.

Peter Lau, a systems engineer at Bull Worldwide Information Systems, said the administration utilities in Lotus Development Corp.'s cc:Mail are fine for registering users, but more is needed to centrally manage multiple cc:Mail nets across an enterprise. Lau oversees a 5,000-user, 100-post office cc:Mail network spanning North America and the Pacific Rim.

"The problem is to ensure delivery of mail and detect problems in the network," Lau said. "Without some sort of management system, you might end up just waiting for the [end user] to call you."

Bullish about the packs

Bull is using software from Baranof and ABS to manage its E-mail net, he said. The Baronoff software, which costs about $3,000, is being used to poll cc:Mail post offices from a central post office site to determine whether messages are getting through in a timely manner.

Previously, Bull monitored the health of its E-mail net using a batch program that sent messages to specified mailboxes, Lau explained. But the catch was that

(continued on page 27)

ISI pSOSystem middleware to ease distributed apps

By Wayne Eckerson
Senior Editor

SANTA CLARA, Calif. — Integrated Systems, Inc. (ISI) last week announced that it is adding middleware to its real-time operating system, called pSOSystem, that will enable developers to build distributed applications that integrate devices such as telecommunications switches and point-of-sale systems.

ISI has licensed from Distributed Software Engineering Tools, Inc. of Lebanon, N.J., software called the Distributed Systems Generator (DSG), which is compatible with ISI's pSOSystem. The operating system is designed to drive devices with embedded processors. DSG is middleware that supports a high-level application program interface (API), multiple modes of interprogram communications and fault tolerance capabilities.

"DSG makes it much easier to build distributed applications on top of pSOSystem or within mixed pSOSystem and Unix environments," said Dave Barnett, product marketing manager at ISI, based here.

The biggest market base for pSOSystem is within the telecommunications industry, which uses the software to drive processors in central office switches, routers and bridges. But pSOSystem is also used to manage processing in POS systems, laser printers and automobiles. The addition of DSG makes it easier for programmers to develop distributed applications that integrate multiple pSOSystem and Unix devices.

The operating system comprises a development environment that lets programmers build

(continued on page 27)

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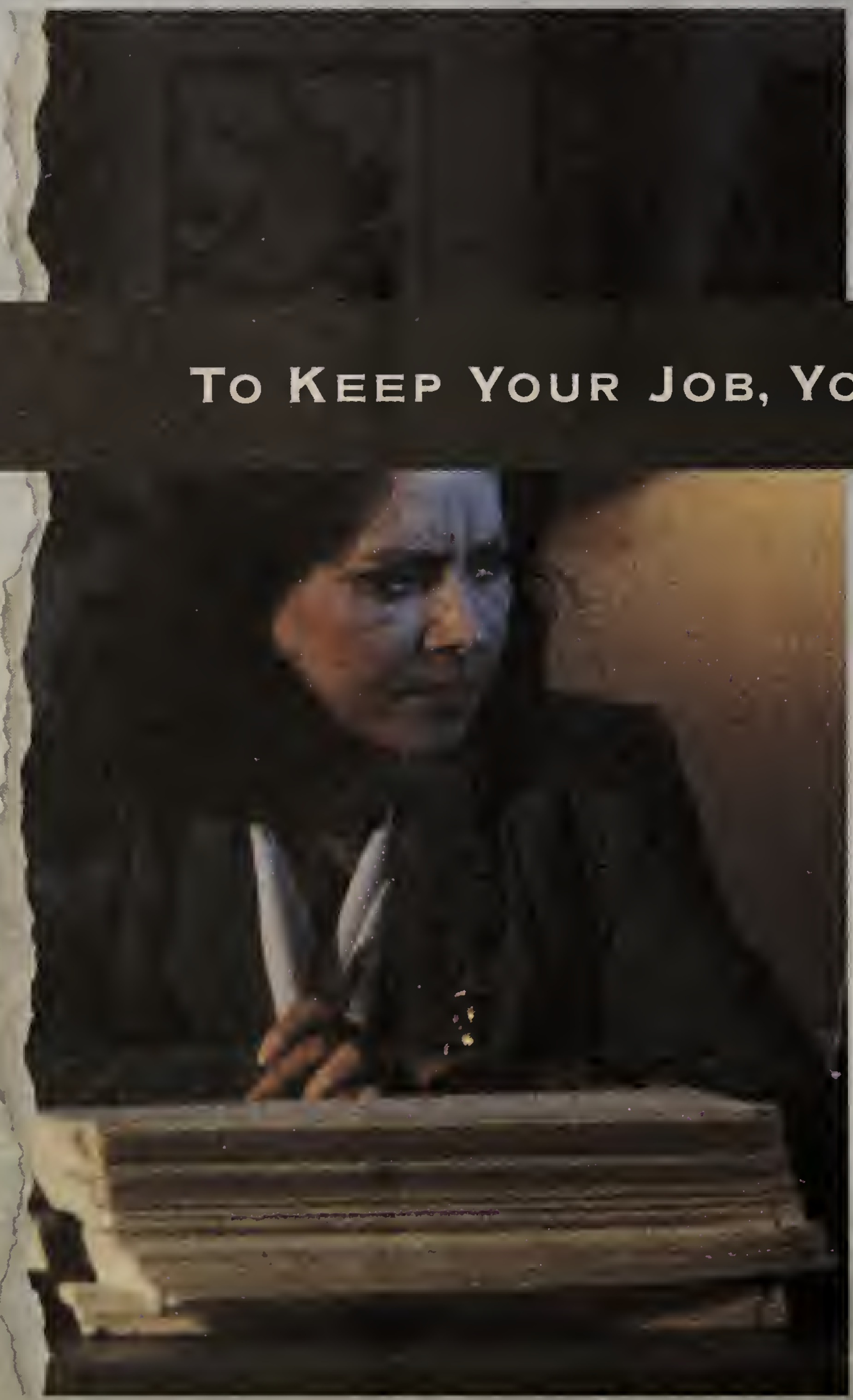

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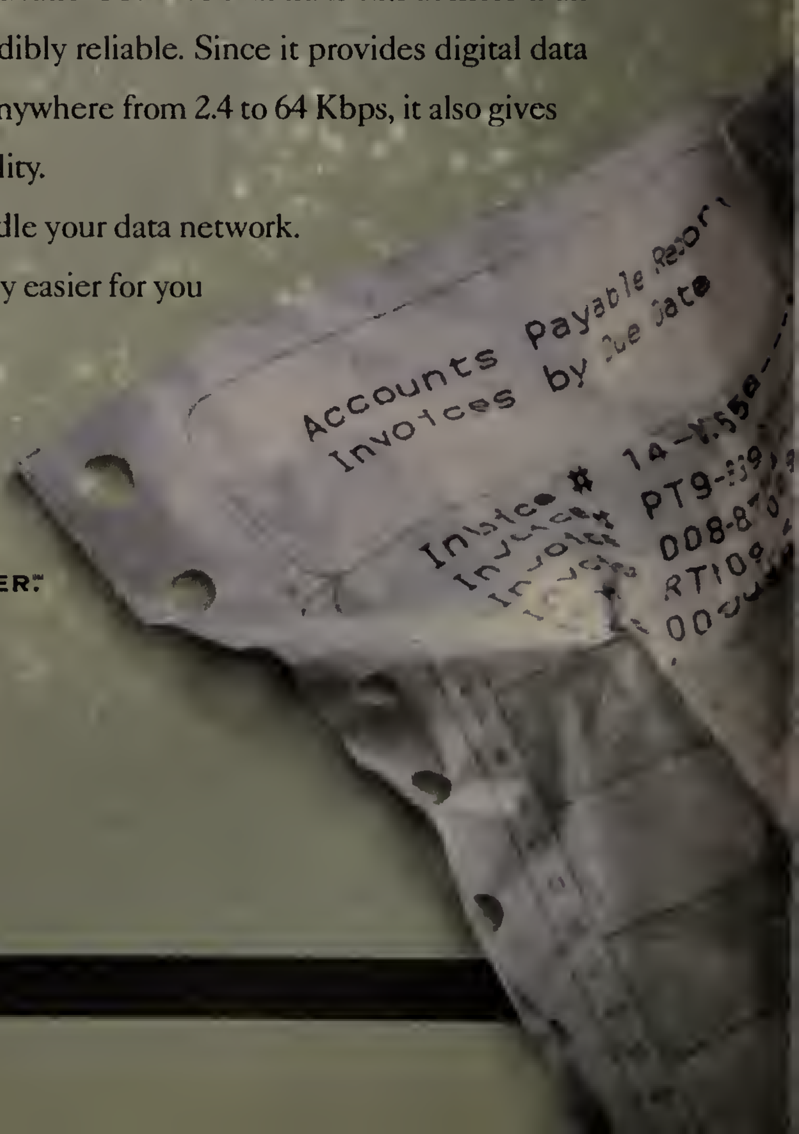

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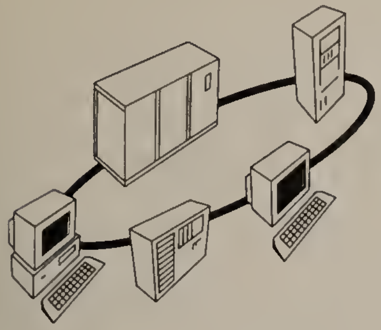

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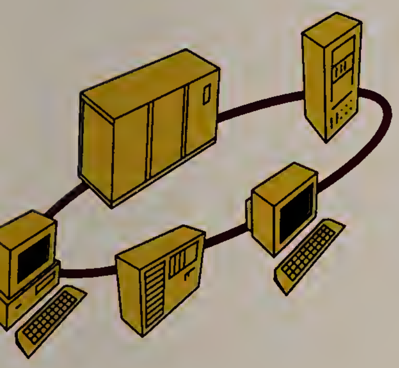

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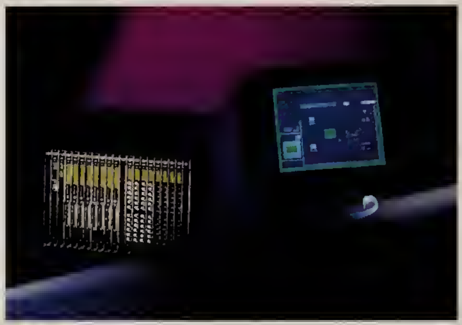

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Circle Reader Service Number 1

Tools emerge for E-mail sites

continued from page 25

the mailboxes needed to be checked manually for the test messages — a time-consuming process.

Bull is supplementing its active E-mail management procedures with software from ABS. The ABS software, currently designed only for cc:Mail nets, is being used to collect statistics on E-mail network usage to track net loads.

While Lau is pleased with the current management setup, he would like to see a tighter integration between E-mail and local-area network management down the road.

E-mail management security

The Social Security Administration (SSA) developed an E-mail management strategy when it began to deploy cc:Mail across the organization in 1989, said Jan Hoffman, director of the division of intelligent workstation and LAN engineering. The organization has more than 10,000 cc:Mail users and about 200 post offices at more than 1,400 sites.

Like Bull, the SSA found that its LAN E-mail system management utilities were limited largely to handling user registration and directories, said Denny Standridge, section chief in charge of E-mail at the SSA.

The administration is using ABS' Gateway Manage for cc:Mail software at a central E-mail hub to monitor communications between cc:Mail post offices, Standridge said.

Remote cc:Mail hubs are configured to dial in to the central hub at predetermined intervals, allowing the ABS software to determine whether a hub has been polled, he said.

As for future management plans, Standridge said his organization has talked with ABS officials about feeding alerts from the ABS system to the SSA's IBM NetView management system.

DOE energizes management

E-mail management also became a top priority at the Department of Energy (DOE) after the department's new secretary issued an edict saying the organization's disparate E-mail systems had to communicate.

Mike Corujo, a senior systems engineer and point of contact for cc:Mail engineering operations and support at the DOE in Germantown, Md., said there was little organizationwide E-mail management in place at the time.

In October, the DOE implemented the ABS software, and Corujo is now monitoring a cc:Mail net comprising 65,000 users, 90 post offices and 25 gateways. The ABS software running at the E-mail hub site in Germantown periodically reads logs from each major cc:Mail gateway and alerts Corujo of anything irregular. Previously, the logs had to be printed out and sifted through in order to track problems or find information, he added.

"The software allows us tò dynamically extract information that will allow us to see how effective our E-mail net is working, such as whether I should be routing messages through another gateway," he said. The software actually allows Corujo to track the route of a specific message — for instance, across multiple hops — to determine where it might have been corrupted, he added.

Users tap into 'grapevine'

continued from page 21

The city is using the NAE's NetWare for SAA gateway to access various applications and information on an IBM Application System/400 located at the police station. The minicomputer is used to store records of all city cash receipts, building permits, municipal court records and police logs.

> "This interconnection allows us to deliver city services more efficiently."
>
> ▲▲▲

Grapevine will also take advantage of the NAE's integrated routing capability to route Novell's Internetwork Packet Exchange (IPX) traffic among the hubs, each of which is configured as an independent LAN.

"This type of interconnection not only enables city workers to perform better in their job capacity, but it also allows us to deliver city services more efficiently to the residents," Jennery said.

The city, for example, is planning to implement a citywide complaint program using the network. Because all city offices will be connected, a resident can register a complaint about any department with any city employee. The employee taking the complaint will route it to the appropriate person for action.

"That system, which is only a reality with the new network, will allow us to reduce both the paperwork levels on complaints and the amount of time it takes to respond," Jennery said.

In the next phase of the project, the city will replace the two IBM mid-range System/36s that are currently running its financial applications with a new AS/400 that will be installed on the city hall LAN and complement the AS/400 already in place at the police complex.

The city will also bring up NetWorth's HubView net management software.

"The management aspect may be the most important in the long run, which is where the hubs are so valuable, because we have good control over the users in each LAN from one device," Jennery said. "Ultimately, we want to track every PC's configuration and do centralized backup of all the PCs and servers on the net."

In the future, the city will also look at implementing other technologies, including document imaging and customized SQL-based database systems.

Middleware to ease apps

continued from page 25

pSOSystem applications on Unix, DOS or Digital Equipment Corp. Open/VMS workstations using C, C++, Ada or SmallTalk.

The applications are then deployed on a variety of embedded processors running pSOSystem, including Motorola, Inc.'s 68XXX and Intel Corp.'s i960, 386 and 486 processor families. pSOSystem also runs on Sun Microsystems, Inc. SPARCstations, as well as Hewlett-Packard Co. HP 9000 and IBM RISC System/6000 workstations.

Currently, pSOSystem requires developers to write a layer of code between applications and lower level transport interfaces, such as Sockets, in order to support distributed services.

With DSG, applications developers write to a high-level API, shielding them from the underlying network so they can focus on building applications.

DSG supports remote procedure calls and message queuing, allowing users to choose between synchronous and asynchronous communications methods.

DSG transparently supports communications between applications on the same processor or different processors either on the same machine or on separate machines. The software selects the most efficient communications pathway between two applications during run-time, minimizing overhead and enhancing performance.

DSG also supports an object naming service and abstract data services. The object naming service allows applications to address remote services using an abstract name rather than an address. This provides location independence, fault tolerance and dynamic reconfiguration.

In addition, DSG supports both the International Standards Organization's ASN.1 Basic Encoding Rules or SunSoft, Inc.'s External Data Representation when mapping data from one machine architecture to another.

The pSOSystem/DSG is priced starting at $9,900 and will be available in July.

ISI: (408) 980-1500.

LANNET rolls out offerings

continued from page 21

LANNET also rolled out the LE-140XTN, a 10-port Ethernet module that supports unshielded and shielded twisted-pair connections via RJ-45 ports.

The module can operate in standard 10Base-T mode or in 10Base-T Plus, which allows it to detect and transmit link failures. When a failure is detected, the module will automatically partition that segment off from the rest of the network to prevent further disruptions.

Available now, the 140XTN costs $1,595.

In order to manage these new additions to the hub line, LANNET released a new version of MultiMan. Version 2.1 not only supports the new modules and per-port configuration switching, but also has new features such as downloadable software capabilities and automatic tracking of non-LANNET devices.

The new release will also allow net managers to configure any two ports in the hub redundant to each other, regardless of media type. Port-level security based on the media access control address is now available, as well, ensuring that only the intended destination receives a packet while the traffic is scrambled to the other ports.

Features specific to token-ring environments include autotopology and beacon detection.

Prices for MultiMan 2.1, which is available now, start at $5,995.

LANNET also unveiled a new Customer Satisfaction Program for its users in North America that includes a free one-year warranty on hardware maintenance and a return-to-factory repair policy. Turnaround on repairs is typically less than 10 days.

For users that require 100% uptime, an on-site spares program is also available, and for users with geographically dispersed sites, the company has contracted with Data General Corp. to provide on-site support.

LANNET: (714) 891-5580.

UB ups net mgmt. with apps

continued from page 21

in the third quarter. Pricing will be announced at that time.

More than a dozen companies are participants in UB's NetDirector Solutions Program, including Advanced Computer Communications, Hewlett-Packard Co., Intel Corp., Microcom, Inc., Network Peripherals, Inc. and Wellfleet Communications, Inc.

"Our goal is to provide better multivendor management solutions for users by enhancing the openness of our management system," Smith said.

In addition, UB extended its partnership base this week via an OEM agreement with FTP Software, Inc. The deal allows UB to resell FTP Software's Transmission Control Protocol/Internet Protocol-based applications and Software Development Kit.

UB: (800) 777-4526.

Store & Forward

continued from page 25

ent and server applications.

The Reflection SDK provides dynamic link libraries (DLL) that support file transfer and message exchanges between personal computers and hosts.

The SDK supports Unix, Digital Equipment Corp.'s VAX and Hewlett-Packard Co.'s 3000 processors, as well as Windows-based development environments that employ DLLs, such as C, C++, Microsoft Corp.'s Visual Basic and Powersoft Corp.'s PowerBuilder.

Available now, the Reflection SDK costs $2,495.

Walker Richer & Quinn: (800) 872-2829.

The **Object Management Group, Inc. (OMG)** last week issued a request for proposal for object services technology. Object services provide many of the same functions in a distributed object computing environment that operating systems offer in a local environment.

The RFP calls for various technology in the areas of concurrency control, externalization, relationships, time and transactions.

A letter of intent to submit a technology proposal is due by Aug. 20, and final submissions are due Nov. 29.

OMG: (508) 820-4300.

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INDUSTRY UPDATE

VENDOR STRATEGIES, MARKET TRENDS, ALLIANCES AND FINANCIALS

Worth Noting

"Clipper Chip should not be called a key escrow system. It should be called a system in which the government holds the key. You won't be able to sue the government for a breach of fiduciary responsibility without a change in the law."

Kate Martin
Lawyer
American Civil Liberties Union

People & Positions

Asante Technologies, Inc. last week announced the appointment of **Ralph Dormitzer** as the company's new president and chief executive officer. Dormitzer was previously group manager of Digital Equipment Corp.'s Interconnect Products Group, which handled the development of DEC's hubs, servers and network interface card lines.

Andrew Burroughs, formerly vice president of global marketing at Sprint International, has been appointed president of **MobiLink**, the newly formed Chicago-based consortium of 15 U.S. and Canadian cellular service providers in North America.

Burroughs will be responsible for managing the MobiLink brand of cellular service, as well as marketing and business matters.

The Exchange Carriers Standards Association (ESCA), a Washington, D.C.-based trade group for standards and telecommunications operations issues,

(continued on next page)

FDDI-over-copper demo gives technology big boost

Vendors make effort to gain user confidence.

By Skip MacAskill
Senior Writer

BOSTON — Standards-based FDDI-over-copper implementations took a step forward here last week when 13 networking vendors joined hands over an interoperability demonstration that gave the technology a measure of credibility.

The symbolism of intense rivals such as Cabletron Systems, Inc., SynOptics Communications, Inc., Crescendo Communications, Inc. and Network Peripherals, Inc. (NPI) sharing the same dais was not lost on those in attendance.

"Standards are not the No. 1 concern of users; interoperability is," said Michael Howard, president of Infonetics Research, Inc., a consultancy in San Jose, Calif. "This demo represents the cooperation that exists between traditional competitors, and that has to give users a lot of confidence."

The demonstration involved a Fiber Distributed Data Interface backbone anchored by hubs from Cabletron, Crescendo, Digital Equipment Corp., Interphase Corp. and SynOptics.

Unshielded twisted-pair adapters for the hub-attached workstations were supplied by Cabletron, Codenoll Technology Corp., Crescendo, DEC, Interphase, NPI, Silicon Graphics, Inc. and 3Com Corp.

Shielded twisted-pair adapters from Pulse Engineering, Inc. and Technitrol, Inc. were also involved, as well as FDDI chipsets from Micro Linear Corp. and Motorola, Inc.

In the demo, equipment from the different vendors was able to exchange and share video feeds as well as interact.

Since the assembled vendors had taken such diverse paths in developing their respective FDDI-over-copper products, the demo's objective was to show that anyone's adapter card outfitted with anyone's chipset could interoperate with anyone's hub. Based on that criteria, the event was a success.

During the last few weeks, several vendors have rolled out products that comply with the draft ANSI standard for running FDDI over unshielded twisted-

(continued on next page)

Group chartered to form new multimedia standards

By Joanne Cummings
Special to Network World

AUSTIN, Texas — More than 20 vendors met here recently to form the Multimedia Communications Forum (MMCF), an industry group dedicated to developing quality of service specifications for multimedia networking.

The group, which includes AT&T, IBM and Siemens AG as among its principal members, hopes to develop international standards that will ensure that users can deploy compatible multimedia applications that meet specified service quality levels.

According to David Van Voorhis, manager of multimedia networking at IBM's Entry Systems Technology Division and president of MMCF, the group will be different from other initiatives because it will focus on the needs of end-user applications.

"Most other groups tend to have a very heavy focus on wires and the stuff in the walls," Van Voorhis said. "In our forum, we'll never get very far away from the end user. We're not concerned with whether a technology supports 100M or 155M bit/sec — we are concerned if it meets the users' expectations about quality

(continued on next page)

"In our forum, we'll never get very far away from the end user."

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Survey: Gauging E-mail's future

When will these technologies become an important part of E-mail?

	Users	Vendors
Client/server	1993	1991
X.400 backbone	1993	1993
Wireless	1994-95	1994
Multimedia	1994-95	1996
X.500 directories	1994-95	1996
Pen-based computing	1995	1995

All of the respondents are members of the Electronic Mail Association.

GRAPHIC BY TERRI MITCHELL
SOURCE: ARTHUR D. LITTLE, INC., LOS ANGELES

Vendors, users polled on E-mail features

Survey finds the two parties differ in prioritizing E-mail issues, suggests better communications.

By Bob Brown
Senior Editor

ATLANTA — Users and vendors have different views about when the next major electronic mail features will emerge, according to a poll of Electronic Mail Association (EMA) members to be discussed at the Electronic Messaging '93 conference here next week.

Users expect X.500 directories and multimedia to become important parts of their mail networks next year or the year after, while vendors think these technologies will not become a factor until at least 1996. Conversely, vendors say client/server computing is already a big part of E-mail, while users say client/server is only now becoming a reality.

Those are some of the findings from an informal survey of 400 EMA members conducted by Arthur D. Little, Inc., a Cambridge, Mass., consulting firm. Walter Ulrich, a director at Arthur D. Little in Los Angeles, will reference these and other findings in a presentation at the EMA's annual conference.

"I think it's interesting to see that there may actually be demand for some E-mail features and enhancements, such as multimedia and X.500 directories, before the vendors are ready," Ulrich said. "Users and vendors need to keep a dialogue going to stay in tune with each other."

The survey also asked respondents to list the issues that they thought will have the biggest impact on E-mail usage in the years ahead and three issues stood out: addressing and directories, interoperability across disparate E-mail systems, and linking E-mail and business systems.

The first issue, addressing and directories, has been a problem for years, Ulrich said. Some progress is being made to simplify addressing, including an EMA-led effort, but work remains (*NW*, May 24, page 2), Ulrich said. Progress is also being made on directories, but "directories continue to be a big headache for customers and a big opportunity for vendors," he said.

Some progress is being made to simplify addressing, but work remains, Ulrich said.

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The second issue, interoperability across E-mail systems, is a problem that Ulrich predicted most companies will resolve over the next 12 to 24 months by adopting X.400 interfaces and E-mail switches and other gateways.

The third issue, which is a fairly new challenge to E-mail administrators, involves integrating E-mail systems into established business processes, Ulrich said. Many E-mail systems have been deployed as separate applications. Integrating them with reengineered business applications can improve productivity by 30%

(continued on next page)

Demo gives technology big boost

continued from previous page

pair wiring, which is expected to be finalized this fall.

While those announcements coupled with the public demo may give the technology some credibility, "FDDI over UTP still needs more widespread industry support and early adopters who can take the ball and run with it," said Charlie Robbins, director of communications research at Aberdeen Group, Inc., a market research firm in Boston.

While the original group consisted of only 13 members, Robbins expects that number to climb to around 40 by the time the next public demo takes place at the INTEROP 93 Fall trade show in San Francisco this August.

The new standard and proven interoperability may give FDDI over copper an edge over competing technologies such as 100M bit/sec Ethernet and Asynchronous Transfer Mode, according to Howard.

FDDI over copper "is a well-developed standard in that it's been eight years in the making," he said. "The emerging technologies are mostly still being discussed with standards not yet completed and a number of issues still unresolved. For users, it will be a matter of how comfortable they are with the technology and what the price points are."

Paul Callahan, senior analyst at Forrester Research, Inc., a consultancy in Cambridge, Mass., said, "FDDI over copper is strictly a pricing issue for users. For the vendors, it's a question of how low can they go to find [the user's] sweet spot."

Pricing on new FDDI products, which generally runs from $1,500 to $2,000 per connection, is quickly approaching the less than $1,000 per-connection figure that is generally accepted as the "magic threshold" in the industry.

"It's not easy for the user out there because they are getting deluged with talk of nonproducts such as 100M bit/sec Ethernet," Howard said. "The user needs to ask one simple question to narrow down the choices: 'Do I need more bandwidth today or can I afford to hold off for a while?' " ◘

Vendors, users polled on E-mail features

continued from previous page

or more, he added.

Ulrich also surveyed users on the biggest obstacles to selling E-mail internally. Responses included the need for end-user training, the potential for annoying junk E-mail, questions about security, lack of management tools and the need for directory synchronization.

He asked users to rank their satisifaction with various E-mail offerings. Local-area network- and host-based E-mail systems were ranked good to very good, while products such as calendars and schedulers, as well as backbone hubs, were given ratings of only fair to good.

For the most part, though, users rated products better than vendors suspected users would, based on a similar question put to the vendors, Ulrich said. That shows that users are being vocal about their problems and that vendors are responding, he said.

Arthur D. Little: (213) 964-8100. ◘

People & Positions

continued from previous page

announced that it plans to broaden its membership beyond the regional Bell holding companies.

ESCA, which will change its name by this fall to reflect the change in membership, is inviting all providers of telecommunications services with investment in transport or switching equipment to join.

Computer Network Technology Corp., the Maple Grove, Minn.-based maker of high-speed channel systems, announced plans to buy **Ultra Network Technologies, Inc.**, a San Jose, Calif.-based supplier of local connectivity products for supercomputers, workstations and servers. The acquisition of Ultra's stock, valued at about $1.88 million, is expected to be completed by July, subject to a definitive acquisition agreement and other closing conditions.

Scott Instruments Corp. and **Silicon Graphics, Inc.** have entered into a joint production and technology licensing agreement under which Silicon Graphics will incorporate Scott Instruments speech-recognition technology into applications to run on Silicon Graphics workstations.

MCI Communications Corp. has sold stock worth $830 million to **BT.** The $830 million in stock, which represents 5% of MCI's common stock, represents the first installment of the 20% interest in MCI that BT intends to purchase. MCI said it will use a portion of the proceeds from the stock to retire debt in order to save on interest expense.

Spectrum Information Technologies, Inc. announced that it has licensed its technology for sending data over cellular phones to **AT&T** for use in computers, modems, chips and cellular telephones. AT&T paid $10 million for the license.

Netrix Corp. disclosed an agreement with **Satellite Transmission Systems, Inc. (STS)** to provide switching equipment for very small aperture terminal networks. STS will resell Netrix's #1-ISS switch and voice/facsimile modules to accounts agreed upon by both companies. The agreement is effective for two years.

US West, Inc.'s mobile communications division **NewVector Group, Inc.** signed an agreement to provide US West with a minimum of 36,000 digital cellular phones based on the Code Division Multiple Access standard, which would also operate in the current analog mode.

SunSolutions, the division of Sun Microsystems, Inc. that markets products for imaging in real time over computer networks, announced that it will open an office in the U.K. to sell to Belgium, Denmark, Finland, Norway, Sweden and the U.K. ◘

Group chartered to form standards

continued from previous page

of service."

Van Voorhis said once an application had been defined, the group would specify several levels of service quality, from low to high.

"For example, we will say that for desktop videoconferencing in the U.S., at the best level of service, the application will require an end-to-end network delay of no more than 50 msec," he said. "Then it will be up to the seller of a network hub to claim that it meets that class of service. And we hope to provide the benchmarks to prove it."

MMCF tackles multimedia networking

The Multimedia Communications Forum

Charter:	To spur worldwide demand for networked multimedia products, as well as define standards and application requirements for multimedia networking.
Founded:	May 1993 in Austin, Texas
Principal members:	Apple Computer, Inc., Ascom Timeplex, Inc., AT&T, Ericsson, IBM, National Semiconductor Corp. and Siemens AG.
Next meeting:	Aug. 23-24 in San Francisco

GRAPHIC BY TERRI MITCHELL SOURCE: MMCF, AUSTIN

At the group's initial meeting, a marketing committee was designated and charged with specifying the applications to be studied, and a technical committee was formed and charged with specifying the technical requirements for those applications. The group hopes to have initial working groups defined by the end of its next meeting, scheduled for Aug. 23-24 in San Francisco to accompany the INTEROP 93 Fall show.

In addition to those groups, the MMCF also formed a small working group to develop a list of standards groups with which MMCF should create liaisons. "It's not our intent to reinvent the wheel or compete with other groups," he said. "We want to be complementary, to see what's been done already and to focus on moving things along."

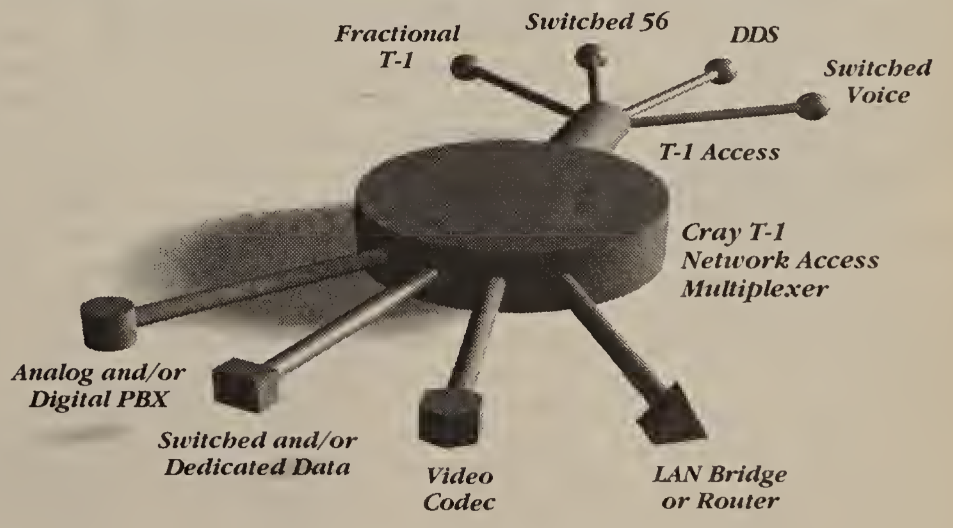
He said the group is building relationships with the Interactive Multimedia Association, which focuses on desktop multimedia standards, as well as several European standards bodies.

The group is actively seeking new members, including end-user companies. For more information, contact Ron Kemper, MMCF administrator, at (512) 346-6607.

Cummings is a free-lance writer based in Marlborough, Mass. ◘

CRAYISM NO. 3

WHY DO YOU NEED SEPARATE NETWORKS FOR VOICE AND DATA?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MANAGEMENT STRATEGIES

MANAGING PEOPLE AND TECHNOLOGY: USER GROUPS AND ASSOCIATIONS

Worth Noting

"800-number portability will be an advantage to most large companies in allowing them to distribute their [800] traffic on a percentage basis across carriers."

Michael Wade
Project manager for
800 services
Bell Communications Research

Manager Minutes

TAMP Computer Systems, Inc. of Merrick, N.Y., has announced Version 6.0 of its Disaster Recovery System contingency planning product that supports site, departmental and business unit disaster recovery plans.

Version 6.0 helps users develop disaster recovery plans for both technology- and non-technology-dependent organizations and operates under WordPerfect 5.1 and most other word processing applications.

TAMP: (516) 623-2038.

Hewlett-Packard Co. has announced a satellite-based interactive training program dubbed the HP Technical Satellite Series.

The series will provide a forum for HP systems training and the exchange of technology tips and information via programs broadcast to 29 HP education centers and sales offices located in the U.S. and Canada.

Courses will be delivered as three-hour interactive sessions aimed at systems, networking and programming managers in HP MPE/iX, MPE V and open systems environments.

A program on Unix systems is currently under development.

(continued on next page)

BOOK REVIEW

BY ERIC SCHMALL

Unleashing the potential of inductive reasoning

Reengineering the Corporation, Jim Champy and Mike Hammer, (New York, Harper Business, 1993), $25.00.

Among the many insightful thoughts in Jim Champy and Mike Hammer's new book on business reengineering is their most compelling idea on the differences between applying technology inductively and deductively.

Champy and Hammer claim business leaders are very good at using deductive reasoning to apply technological fixes to problems. Using this method, one first identifies the problem, arrays the possible solutions and, after careful review, selects the best one.

In the pursuit of business reengineering, however, the authors argue that one has to use inductive reasoning in applying technology. By this they mean one has to start with the technology and look upon it as a potential solution to a problem that may not have even been recognized.

This inductive approach does not come easily. The authors say that even a brilliant inventor often misses the inductive leap concerning the application of technology.

In the telecommunications field, we have a front-row seat on the endless technology parade. Even so, we hear critics deride many of the new and exciting breakthrough products, calling them "cures looking for a disease."

This attitude belongs to people who rely solely on the deductive approach. They assume they already know what the problems are. By dismissing these innovations as unsuitable for recognized problems, they miss the opportunity to apply them creatively to make revolutionary resolutions to hidden problems.

The revolutionary contribution that telecommunications can give your organization comes from using the inductive approach. But to unleash its potential, you and your staff have to be more than experts in the technical field — you have to know your users' business. You have to understand the fundamentals of how a department functions and what kinds of limits they face in accomplishing their missions. Only then can you begin to think creatively about how a new enhanced 800 service, Integrated Services Digital Network or interactive voice/data application might bring about some revolutionary improvements for your users.

Learning to apply technology inductively is only part of the solution. Be prepared to find a great deal of reluctance from your users about your ideas beyond technical issues. After all, they are used to viewing you and your organization as simple order takers. You're a technie, and you're only supposed to know about dial tone.

These are tough perceptions to reverse. It takes a great deal of patience and constant, diplomatic advocacy to demonstrate how your technology can make a significant improvement.

If the telecommunications function is to thrive — or even survive — within your organization over the next decade, you will have to transform your mission to provide your users with this kind of support. Any outsourcing entity can take orders for additional phones. Your irreplaceable value will be found when you can use technology to add creative value to your users' basic functions. The first step in this critical transformation comes with applying new telecommunications technology inductively. ◻

Two kinds of training

Instructor-lead	Technology-based
Continuous time is spent away from regular job.	Can be paced to minimize the impact on work load.
Travel expenses are likely.	No travel expenses.
Per-person-based fee.	Typically a flat fee, regardless of the number of students.
Likely to be used only for job-related training.	Inexpensive means of cross-training.
Participants are often at different levels when starting a class.	Can be used to bring participants up to a certain level prior to a class.
Class often starts with the background or history of a subject.	Can be used to deliver background information prior to the start of a class.
Increases effectiveness of an employee.	Increases the effectiveness of an employee at a lower cost.
Cost for repeating.	No cost for repeating.

GRAPHIC BY TERRI MITCHELL

Firms share their TBT success stories

Technology-based training, ranging from videos to multimedia tools, can bring unexpected rewards.

Second in a two-part series.

By Jim Cavanagh
Special to Network World

Last week's story took a look at the various types of technology-based training (TBT) products available, including video products, those based on personal computers and hybrid video/computer-based programs. This week's installment examines the benefits some companies are getting out of TBT.

GE Information Services (GEIS), an information services and networking firm headquartered in Rockville, Md., uses computer-based training programs offered by The Saratoga Group and other print, video- and computer-based training products. GEIS uses its library of TBT products to familiarize its employees with technologies such as IBM's LU 6.2 and Advanced Peer-to-Peer Networking, enterprise network management and the Transmission Control Protocol/Internet Protocol, as well as supplement in-house training programs.

GEIS maintains 10 U.S., one Asian and one European remote training libraries. Employees may sign out material for personal study or as a prerequisite to classroom instruction.

"At GEIS, we have a strong focus on prerequisites. The use of [computer-based training] to familiarize a student prior to classroom instruction creates a level playing field and allows our students to get more out of the class in less time," said Donna Rothert, GEIS' manager of technical training. "Our job is to provide clients with up-to-date technology. In order to do our job, we must be fully aware of all the options. TBT helps us do that.

"We have found it very cost-effective to purchase general [computer-based training] material to supplement our classes. But [computer-based training] products can vary," Rothert explained. "It is important to do an evaluation prior to making any purchase. The accuracy, up-to-dateness, cost and presentation format are all very important evaluation points. The [computer-based training] should use acceptable training methodology, which includes repetition of material, and test questions that reinforce the course content."

Storage Technology Corp. (STC), a manufacturer of computer peripherals in Lewisville, Colo., makes good use of the local-area network computer-based training from Cooper and Associates, Inc.'s Teletutor. The Teletutor LAN computer-based

(continued on next page)

Firms share their TBT success stories

continued from previous page

training provides "basic networking exposure to hundreds of customer service engineers with experience in large systems data processing but not networking," said John Kleinbech, STC's senior education consultant.

"The Teletutor [computer-based training] can be used on an on-demand basis and saves on travel and lodging costs," Kleinbech said. "Field managers like it, too, because a person can be interrupted at a terminal but not if they're half a continent away in a classroom."

The Teletutor LAN computer-based training covers a range of subjects from network topologies and communications concepts to planning and implementation. The training is also accompanied by an excellent "on-disk" LAN planning and implementation supplement.

Like Rothert, Kleinbech sees benefits in using computer-based training materials as a prerequisite to classroom instruction. "We can save time and money on classroom instruction, as well as put the instructor's time to better use teaching more advanced material," he said.

Steve Wirth, Procter & Gamble Co.'s team leader for data communications problem resolution, agrees but also puts a practical spin on training in general.

"Everybody's business is not the same," he said. "Whether you use a training tape or take an off-site course, it is not going to be tailored. Effective training still takes one-on-one training and a formal training plan."

Procter & Gamble includes videos and workbooks from TCT Technical Training in all of its formal employee training plans, according to Wirth. "What the TCT videos and workbooks let us do is create a more effective training plan that's tailored to the individual," Wirth said. "If someone goes right through T-1, for instance, we can move them along to something else. But, if they have trouble with the workbooks, we can spend more time on that area."

The Associated Press is using the Tele-Communications Training Monthly video-based training materials from James Fox Associates to train its 300-plus technicians. The AP's engineers and technicians must maintain a common carrier satellite network with more 4,000 dishes in the field. Before video-based training, one person was sent to class and was then expected to become the "instructor" and train other technicians.

With video-based training, more people can be trained directly, at a lower cost and with no loss of content. It also cuts travel expenses and employee time spent away from the job.

"At the Associated Press, we look more toward efficiency and quality than we do the profit motive," said Jack Pace, personnel executive. "We have not really analyzed the dollars and cents [of training], but we have seen enough improvements" in our technicians' skill level to know video-based training is valuable.

Using the current success with video-based training as a springboard, Pace is now launching a program aimed at solving the "canned" training problems mentioned by Procter & Gamble's Wirth.

"We are working with Jim Fox [president of James Fox Associates] to tailor a custom LAN course," Pace said. "The course will be video-based and will cover basics as well as specific aspects of LAN products we use in our networks."

While the costs and scope of custom video-based training projects can vary widely depending on how much custom video footage is produced vs. how much "canned" stock video is used, it is possible to create a credible, customized training video even with a limited budget and time frame.

TBT success stories abound, but the impact of TBT is greatest when the program is driven from the top down. This has never been more true than at D.R. Gerard, Inc., a network integration and installation company in Doylestown, Pa.

President Dave Hewchuk recognized that a gap between college and technical school courses and the training required by the company's technicians was causing the firm to lose money due to reworking incorrect installations. The reworks had a negative impact on accounts receivable, employee morale and progress on other jobs.

Since instituting the video-based training program, employees see themselves as more than "just a cable grunt," receivables have improved, and D.R. Gerard is "improving the quality, number and size of jobs we're getting," according to Hewchuk.

D.R. Gerard's program is unique because of the way video training material is used to reinforce material learned in the classroom. As opposed to being used as a prerequisite or in lieu of instructor-lead training, D.R. Gerard's classroom instruction and hands-on laboratories give students their initial introduction to new material. During the week following the class, students view the videotapes and begin to internalize the new material. A follow-up question-and-answer session a week later works to clarify the material for students, and practical application of the new skills on the job solidifies the information and makes the new knowledge a part of students' permanent repertoire.

The cornerstone of the D.R. Gerard program is the training video library from James Fox Associates, coupled with the substantial technical training skills of its president. The training library covers a broad spectrum of topics, from network topology to data communications concepts and terms, to T-1, analog line measurements, X.25 protocol analysis and a wide variety of other topics. It is used in conjunction with "hands-on" exercises and interactive question-and-answer sessions to create a well-rounded and capable technician.

D.R. Gerard's Hewchuk has not been the only one to recognize the gap between college or technical/vocational training and the skills required on the job.

At Tolles Technical Center in Plain City, Ohio, Superintendent of Schools Brian O'Mara has been working closely with business/education partner AT&T in applying the hybrid computer/video-based Telessentials Curriculum to the learning needs of 11th- and 12th-grade vocational/technical students who will soon be entering the work force.

"Through the innovative use of current training technology, such as AT&T Telessentials, we maintain an overall placement rate of about 91%," O'Mara said. "We have to keep our students up-to-date. Ten years ago, we were doing things with vacuum tubes, and today there are no such creatures."

Look, up on the screen . . .

More powerful than a manual or book, faster than an airplane to a classroom, able to leap small budgets in a single bound — it's technology-based training! TBT allows more in-depth training with greater retention than static material in books and manuals. TBT can be used with minimum disruption to the typical work schedule and without travel time or expenses. A comprehensive TBT program can be undertaken even by departments with very limited budgets. As budgets tighten, staffs shrink and each member is called on to do more and more with less and less. You may find yourself saying, "Look, up on the screen. It's a program. No, it's a class. No, it's technology-based training!" ◻

Cavanagh is an Atlanta-based regional application engineer for a manufacturer of fast packet and frame relay networking systems and has been using technology-based training since the mid-1970s.

Manager Minutes

continued from previous page

A different topic will be covered each quarter with the following broadcasts currently scheduled: Network Management in the '90s, scheduled for September 1993; The Secrets of Client/Server Applications, in December 1993; Building and Using Relational Databases, in March 1994. The cost is $250 per seminar. For more information, call (800) 472-5277, Ext. 329 in the U.S. or (800) 268-1221 in Canada.

The MIS department of **Dresser-Rand Co.'s Compression Services Division**, located in Broken Arrow, Okla., has been selected from the company's 8,000 employees to receive the company's Corporate President's Quality Award. The award is presented to an individual, group, team or department that has shown continuous dedication to the fundamentals of total quality, marked by tangible and lasting accomplishments.

Examples of the group's accomplishments include automating accounting and purchasing procedures using a networked system that has reduced cycle time in these areas by 90% and a parts ordering system that has likewise reduced cycle time, saving about $200,000 in inventory. An important factor in the MIS group's success was the migration of processing from a mainframe to a Novell, Inc. local-area network. ◻

CRAYISM NO. 4

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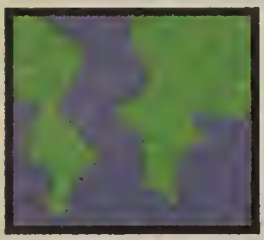

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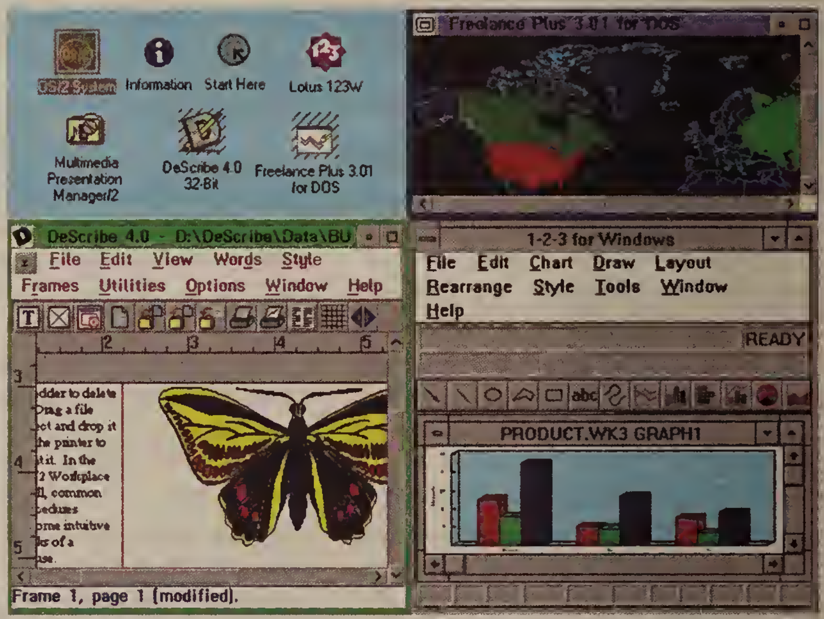
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Start Here
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File Edit View Words Style
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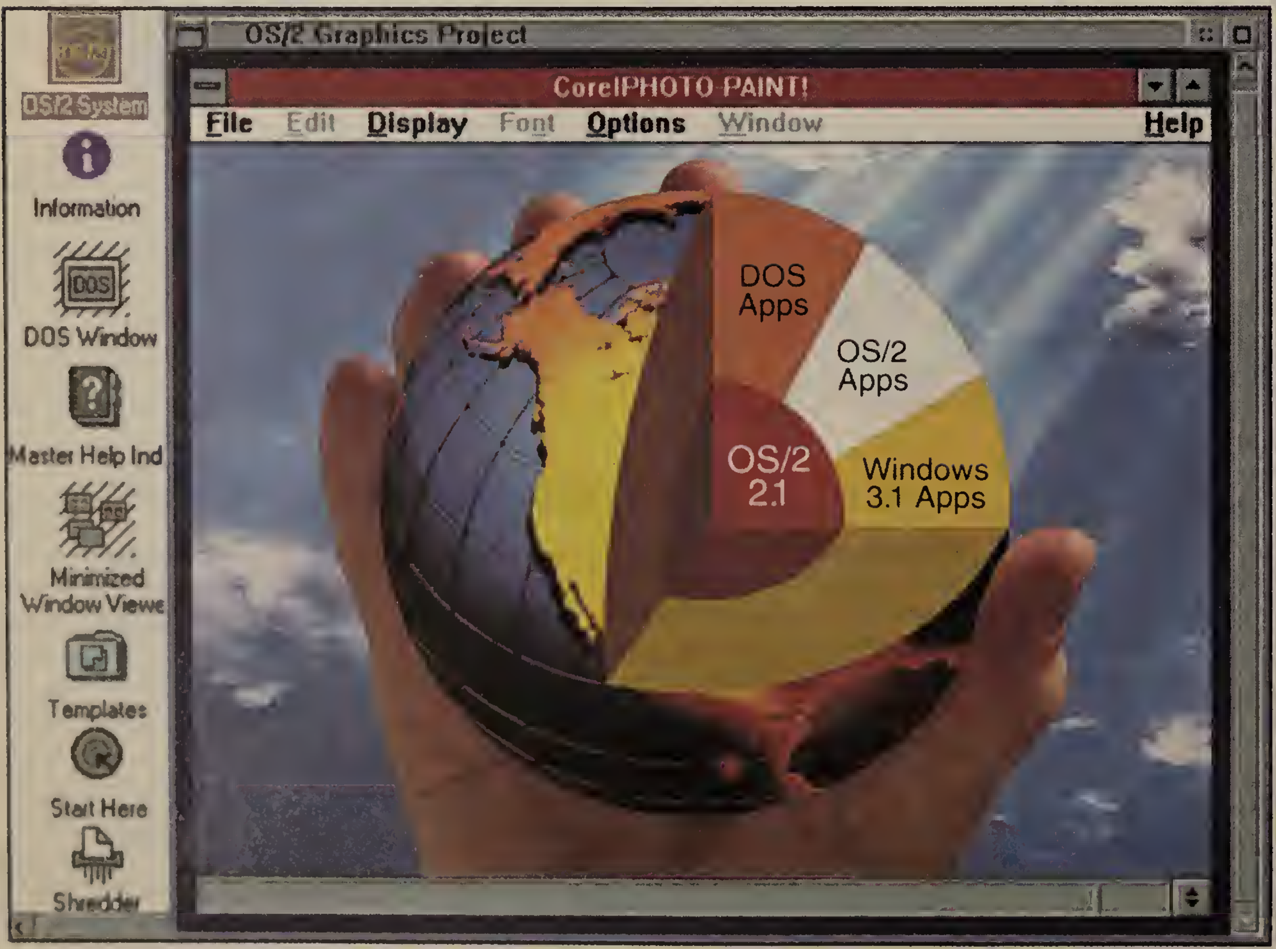

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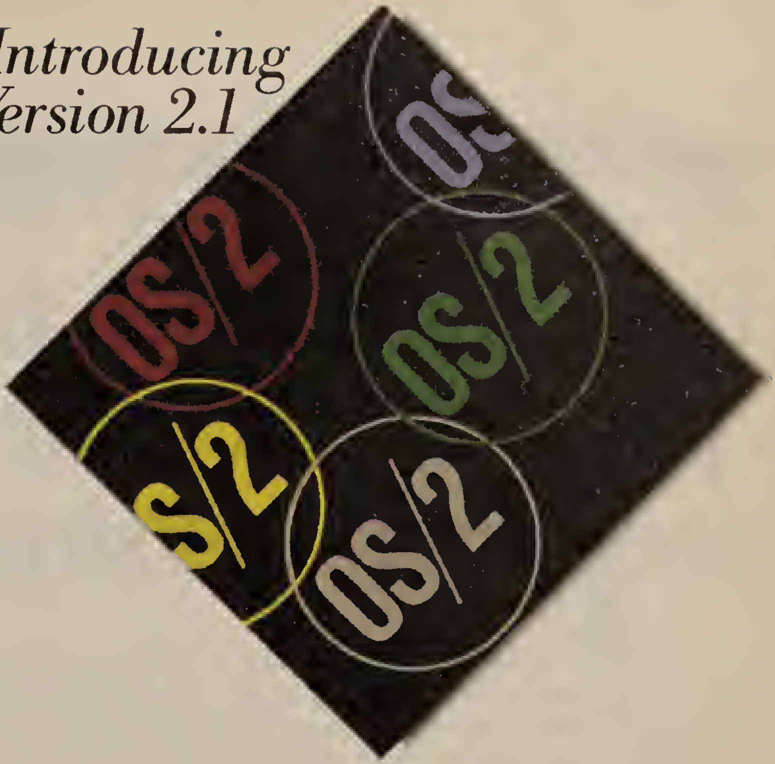

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- Fully exploits latest multimedia applications.
- Supports CD-ROM, PCMCIA and pen technologies.

IBM

OPINIONS

TELECOMMUNICATIONS ISSUES

BY EDWIN SPIEVACK

Users may have to pay the price for area code revision

Users need to speak up now regarding a planned revision to the area code system or risk having to pay more for customer premises equipment. The interchangeable area code plan, scheduled to take effect in 1995, not only will require new dialing procedures, but also may drive up the cost of customer premises equipment due to the equipment modifications it will require.

Instead of using the current area code format, in which the second digit is always a 0 or 1, interchangeable area codes will allow any digit from 0 to 9 to be used as the second digit. This means area codes will have the same format as local exchange codes; therefore, dialing the number 1 plus the seven-digit phone number will no longer be an option for toll calls made within the caller's home area code. Instead, callers will have to dial 1 plus the area code and a seven-digit local telephone number, for a total of 11 digits, to dial toll calls — even those within their home area code.

Alternatively, callers could be required to dial seven digits for all direct-dial calls inside their area code. But this means the procedure for dialing toll calls inside the home area code will be identical to that for dialing local calls. Therefore, a caller in a state that has only one area code, such as New Hampshire, could not distinguish a local call to the next town from a more expensive toll call across the state.

Network managers make considerable investments in their communications systems to monitor and restrict certain types of toll calls. Substantial equipment modifications, at additional costs, will be required to retain the same call control network managers currently have, particularly with respect to the seven-digit plan.

Many older systems will be unable to read the interchangeable area codes. Nor will they be able to provide toll restriction within home area codes where 1 plus 10-digit dialing is not the convention. Users will have to weigh being unable to dial interchangeable area codes or restrict intra-area code toll calls against the cost of replacing the system.

Users have petitioned the Federal Communications Commission to require that carriers uniformly retain the 1+ prefix as an exclusive toll access digit. They cite $1 billion in unnecessary expenses for users to comply with "unnecessary elimination of the 1+ system" only to open themselves to additional risks of exposure to unintended long-distance charges. To date, no action has been taken on the petition.

Bell Communications Research, the administrator of the North American Numbering Plan, is privy to each telephone company's approach to implementing interchangeable area codes. It is essential that Bellcore communicate these plans to all parties that will be affected by this numbering plan change. Users should push Bellcore to provide more information on this issue and voice their concerns about it now, while there's still time. ☑

Spievack is president of the North American Telecommunications Association. He can be reached at (202) 296-9800.

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EDITORIAL

Strategic plans may differ, but they share a common thread

When it comes to technology strategies, companies are like snowflakes: No two are identical. But there are some common items nearly every company can include in its strategic plans.

- **Develop a plan for building an integrated messaging architecture that supports not only electronic mail but also more complex documents.** Don't make the mistake of waiting for end users or management to demand this. By providing a common messaging infrastructure, you'll foster interaction among departments and business units in ways no one can foresee.
- **Drive the adoption of work flow and document-handling applications that take advantage of your messaging infrastructure.** Work with department managers to get these technologies adopted. They will help end users do more with less and respond more quickly to customer needs.
- **Kick your people out of the network department.** Get them involved in applications development to ensure the success of client/server projects. Communication problems really slow the move to network computing, and it's up to you to get involved sooner rather than later. Your staff ought to be working with database administrators to achieve the goal of enterprise data access. Don't wait for them to come to you.
- **Where possible, centralize control over local-area network servers that now house the corporate data jewels.** You'll simplify your job by bringing them together under your watchful eyes. It'll improve network and systems management, make it easier to update and manage applications and let you save money by bringing more applications onto fewer, more powerful machines.
- **Plan for automating net management.** Find ways to increase the ratio of end users to support staff now or the rising cost of net management will earn you black marks with upper management.

Including these items in your plans will put you a long way down the road to achieving that oft-spoken but nebulous goal of aligning technology with business goals. ☑

DISTRIBUTED COMPUTING

BY JOHN R. RYMER

Distributed object computing will transform today's nets

Recent developments in distributed computing indicate that the industry is moving into a new phase: the era of distributed object computing (DOC). During this era, the network will emerge as the dominant platform for a wide variety of high-level services and tools that will make powerful distributed applications easier to construct than ever before.

These high-level services have big implications for network managers. If applications are built to use common services, they will be easier to maintain, tune and debug. In contrast, applications that implement their own unique notions of transaction management, for instance, are a network manager's nightmare. When problems arise, it is difficult to trace their causes, whether it is the network, the system or the application.

An early example of one of these high-level services is the Encina transaction monitor and tool kit from Transarc Corp. Encina is a key part of IBM's CICS/6000 on-line transaction processing environment for AIX. Encina adds transaction management to the Distributed Computing Environment, enabling developers to manage on-line transactions in a distributed environment. The alternative would be for developers to write the transaction management routines themselves.

A more recent example of a high-level service is HyperDesk Corp.'s HyperDesk Distributed Object Management System (HD-DOMS), which Novell, Inc. has licensed to ship with NetWare versions starting this fall. HD-DOMS allows applications, databases and all net services to be modeled as objects.

In conventional software development, the developer must write calls to an application program interface to use a particular network service. With HD-DOMS, the developer can use a service by issuing a simplified service request. The developer is no longer responsible for knowing where the desired service resides on the network and how to bind the request to the service. The result is to transform Novell's complex NetWare service environment into a dramatically simplified platform for building business applications.

> DOC technology has been following a steady pace of development since the early 1980s.
>
> ▲▲▲

Other emerging services are just as significant to user organizations planning their distributed computing architectures. Aggregate Computing, Inc.'s NetShare and Object Systems, Inc.'s Distributed Object Integration Tool (DOIT) build on the foundation provided by core distributed computing services, such as file, print, message transport, security and network management services.

NetShare and DOIT will simplify the construction of distributed applications overall by making complex functions, such as automatic resource selection and multidatabase access, available as services that can be called from within applications.

The emergence of new services like DOIT and NetShare, as well as the adoption of advanced distributed computing services by mainstream vendors, are vital next steps for corporate software developers.

These services round out the basic environments defined by the Object Management Group, the Open Software Foundation, Inc., Unix International, Inc. and other standards-setting organizations.

High-level services will have a dramatic effect on the network. Each of them, in one way or another, supports the construction of applications from self-defining, intelligent modules that interact across networks of arbitrary scope. This is the right paradigm to make the transition from today's resource-sharing networks to tomorrow's distributed application platforms.

DOC technology has been following a steady pace of development since the first commercial products to use the approach appeared during the early 1980s. But until now, developers had not had products that employed the technology available to them.

This is the primary significance of Novell's licensing of HD-DOMS. In short, a distributed object management platform will be available on potentially many thousands of NetWare servers in many thousands of customer sites.

DOC has arrived in the corporate mainstream. By providing a platform for high-level services, the network will ensure DOC's spread through corporate development shops. ◘

Rymer is editor in chief of "Distributed Computing Monitor," a monthly report published by the Patricia Seybold Group, Inc. in Boston. He can be reached at (617) 742-5200.

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TELETOONS

BY FRANK AND TROISE

Has anyone seen the exercise video I left in the stack of tapes on menu and file server utilities?...

LETTERS

Advocating standards

Congratulations on your editorial "When is a standard not a standard?" (May 10, page 36). As a past participant of ANSI's now-defunct Industrial Automation Planning Panel, I was, and still am, a strong advocate of standards and universally accepted (by both users and suppliers) de facto standards.

It's unfortunate that youngsters such as Bill Gates and others don't recognize the value of standards. It would be of long-term value to all users if Gates and others could force themselves to follow the path of system commonality.

Who has the prettiest, fastest, user-friendly graphical user interface (GUI) shouldn't be the issue, especially when those vendors are generating more proprietary operating systems and nonstandard platforms.

Instead, let's get our industrial segment going. MIS systems and industrial process control and production systems are currently being alloyed; therefore, it is very important that we have one seamless look-alike endeavor from the overall systems point of view. Generating information via fancy GUIs for the sake of handling information, or vice versa, won't hack it in the long run — particularly if the industrial segment falls apart because of this misdirected notion.

The Europeans will be running away with their international standards for computer hardware, software and networking if our industry can't stand as a fully united front. We should be showing the International Standards Organization that we are the best in computer technologies, and our standardized approach to systems must form the basis for all future standards.

Dave Rogers
Independent consultant
Pittsburgh

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IBM
UPDATE

SPECIAL ISSUE

Users call the shots now

Back in the old days, before the advent of local-area networks and distributed computing, IBM maintained control over customer accounts via its Systems Network Architecture.

But that's all changed now. IBM is scrambling to evolve existing products and spin off new ones to keep up as customers move to distributed nets.

In "Playing both ends," Senior Editor Michael Cooney points out that while IBM has tried to position NetView for host environments and NetView/6000 for distributed multivendor nets, it appears NetView/6000 can make inroads into SNA sites at NetView's expense.

Likewise, in "A delicate balancing act," author Steven S. King gets IBM's director of networking systems architecture, Rick McGee, to map out steps that IBM is taking to support its Advanced Peer-to-Peer Networking (APPN) protocol on equal footing with the Transmission Control Protocol/Internet Protocol, giving users a choice of networks over which to ride.

And, in "AnyNet anyone?" Consultant Anura Guruge explains that IBM has even served up software that converts SNA/APPN traffic so it can ride over TCP/IP nets, as well as for TCP/IP data to be converted to run over SNA nets.

The upshot is IBM no longer maintains the control over customers that it once enjoyed. Users are now calling the shots. And IBM is hustling to anticipate and react to customers' changing needs, giving users what they want.

Playing both ends

The lines between hierarchical and distributed net management have been drawn, and IBM is trying to serve both markets. But while the firm has crafted a key role for host-based NetView, it's apparent that NetView/6000 has appeal in both environments and may prevail in the long run.

page 40

A delicate balancing act

IBM's Rick McGee walks a tightrope as he discusses support for APPN and TCP/IP.

page 44

AnyNet anyone?

New software makes it possible for any type of application to ride over APPN or TCP/IP backbones.

page 49

ILLUSTRATIONS ©1993 BOB DAHM

Playing both ends

By MICHAEL COONEY

IBM casts wide roles for NetView, NetView/6000 in hierarchical and distributed net management.

Times are a changin' in the world of IBM network management. Where NetView was once IBM's undisputed king-of-the-hill management platform, it now faces a stiff challenge from — of all things — another IBM offering, the emerging Unix-based NetView/6000.

IBM continues to recommend that users tap host-based NetView to manage traditional mainframe-oriented Systems Network Architecture nets and employ NetView/6000 to control multivendor local-area network environments that do not include a mainframe. But the distinction between where the functionality of one leaves off and the other begins is blurring.

While still a potent market force, the mature NetView is losing favor with many SNA shops that are looking for more flexible and less expensive decentralized management platforms such as NetView/6000, the adolescent in IBM's net management family.

Introduced in January 1992 as IBM's entry into the Simple Network Management Protocol arena, NetView/6000 has gathered enough strength to now be considered the heir-apparent to NetView's throne.

Built on Hewlett-Packard Co.'s OpenView management technology, NetView/6000 is designed to manage IBM routers, hubs and token-ring or Ethernet LANs. It does not yet have the full-fledged management capabilities of NetView, but IBM is evolving the platform to take on more NetView-like duties, including SNA management.

Yet IBM continues to enhance NetView in the hope that users will keep relying on it, no matter how their enterprise nets develop. Since its introduction in 1986, NetView has picked up the ability to manage non-IBM devices through the addition of SNMP support, as well as automation features, a new graphical management console and a variety of other connectivity monitoring enhancements.

In the meantime, IBM addressed its long-standing lack of a single, integrated package for LAN management with the introduction last fall of the OS/2-based LAN NetView, which can report management data to either NetView/6000 or NetView and is set to ship next month.

"IBM has to balance the management of legacy SNA with the emergence of TCP/IP internetworking," says Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy. "At the same time, it has to provide affordable management nodes and a sensible — from users' standpoint — management platform."

The challenger

The strategy of moving SNA management to a smaller platform makes sense because network managers are struggling to squeeze every dollar out of their budgets and the NetView/6000 platform fits the bill in many cases, says Walt Dymek, an analyst with DataPro Information Services Group, a research firm in Delran, N.J.

NetView/6000 runs on IBM AIX-based workstations, which are less expensive than the mainframes required to run NetView. It can also distribute management functions across multiple workstations, instead of centralizing all management chores on a single host, as NetView requires.

"Clearly, NetView has lost market momentum when it comes to managing distributed networks," says Igor Stenmark, a program director for Gartner Group, Inc., a Stamford, Conn., consultancy. "NetView/6000 has picked up that momentum and is running with it."

It takes an average of 400 man-hours to bring host-based NetView/390 up from scratch in an SNA environment. In contrast, it takes an average of about 15 minutes to activate AIX NetView/6000 from scratch in an SNMP environment, according to "SNA Perspective" in Saratoga, Calif.

One of the key hurdles NetView/6000 must clear on its way to gaining broader success is how well it will be outfitted to manage legacy SNA and future Advanced Peer-to-Peer Networking (APPN) environments while it's ramped up to support ever-growing Transmission Control Protocol/Internet Protocol nets.

"NetView/6000 can monitor upward of 30,000 objects, which is the most in the industry for this type of platform," says Sanjiv Ahuja, manager of IBM's AIX net management services. "But that's nothing compared to the two million or three mil-

(continued on page 42)

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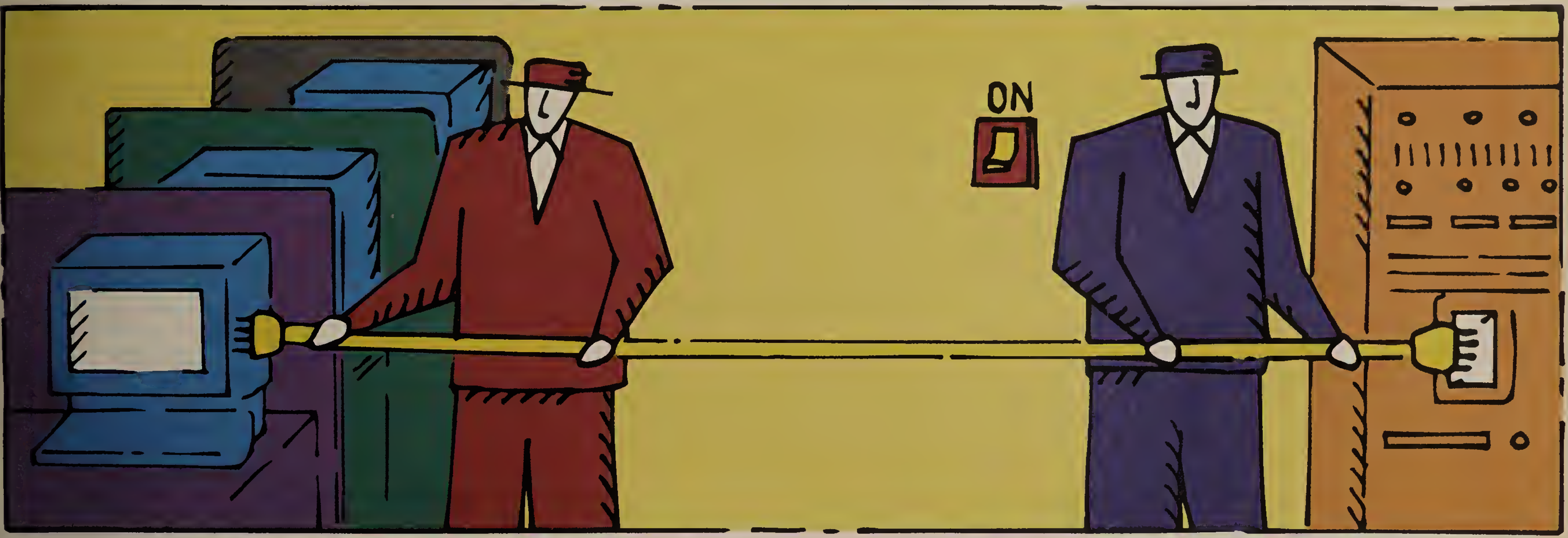

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(continued from page 40)

lion objects NetView can handle. The challenge to get close to NetView's level is one we've accepted."

According to Ahuja, a variety of future enhancements, including a new NetView/6000 application called SNA/6000, will transform NetView/6000 into a true enterprise manager (*NW,* May 17, page 1). "We are in the process of building an enterprise management system based on NetView/6000 that can manage large multivendor or SNA environments," Ahuja says. "It's not there yet, but enhancements in the next nine to 12 months will help get it there."

SNA/6000 software will enable NetView/6000 monitor VTAM, the system that controls SNA communications on the mainframe, in a NetView host. Essentially, the software provides an LU 6.2 link that enables NetView/6000 to collect the SNA alerts and other pertinent management data that SNA devices forward to NetView. The new application will eventually let users control SNA devices from NetView/6000.

NetView/6000 will also evolve to manage APPN nets, according to Ahuja, but he would not provide any details of how IBM intends to provide this functionality. "We will provide comprehensive support — that is, integrated topology display, alerts and command/control — for APPN networks that are built around the IBM 6611 [Network Processor] with APPN Network Node capability," Ahuja says. NetView/6000 can currently only manage 6611-based APPN networks.

"Users will be able to realize their management goals using either NetView, NetView/6000 or some combination of the two," he adds.

The challenged

While NetView/6000 may be getting a lot of attention lately, NetView isn't likely to end up on the scrap heap. There are more than 50,000 SNA networks in the world, and about half of them are managed by NetView. That kind of user power and influence isn't going away any time soon and will not be ignored by "strategy meisters" at Armonk, N.Y., headquarters.

In fact, sources indicate that despite rumors to the contrary, IBM is still investing more money and people in developing NetView features rather than new features for its NetView/6000 platform.

"There is still a struggle within IBM over which platform — NetView or NetView/6000 — will be the ultimate enterprise manager," says one observer who requested anonymity. "It depends on who you ask as to which faction will ultimately win."

Because of its cost and mainframe processing requirements, NetView is still a cash cow, and IBM needs as many of those as it can get these days, he adds.

Others say IBM will have to do quite a selling job to get mainframe users off NetView and onto something as new, small and different as NetView/6000.

"IBM can't afford to do a lot of boat rocking here, and they can't start a panic flight from the mainframe paradigm by pushing NetView/6000," says CIMI's Nolle.

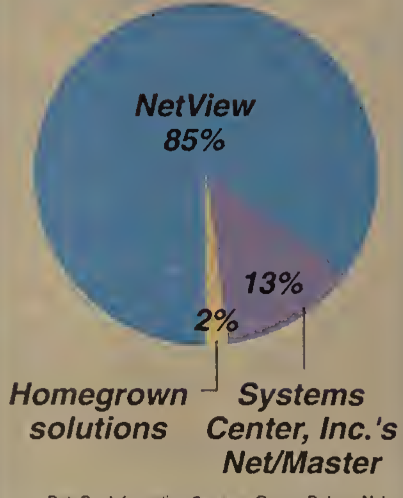
To keep NetView the cream of its network management product crop, IBM has annointed NetView as the strategic platform for managing APPN environments. NetView/6000 will be enhanced to manage APPN nets, but IBM says it believes NetView is better suited for the task.

"We still believe that NetView is the premiere SNA management platform, and that will go for APPN networks, too," says Michael Willett, lead NetView architect at IBM. "APPN management will likely evolve as users build APPN networks."

In March 1992, IBM issued a statement of direction saying it would manage APPN nets via Open Systems Interconnection enhancements to NetView. The statement says NetView will use OSI's Common Information Management Protocol (CMIP) — an X.700 OSI management standard — for managing its evolving APPN environment.

A feature known as Multiple Domain Support (MDS), available in NetView Version 2 Release 2, will provide management services for the new APPN/SNA. MDS accepts LU 6.2 sessions into NetView from APPN nodes, while CMIP data flows on top of the LU 6.2 sessions. IBM demonstrated this APPN management platform at its APPN Implementor's Workshop just two months ago (see graphic, this page).

Control of the SNA management market



DataPro Information Services Group, Delran, N.J.

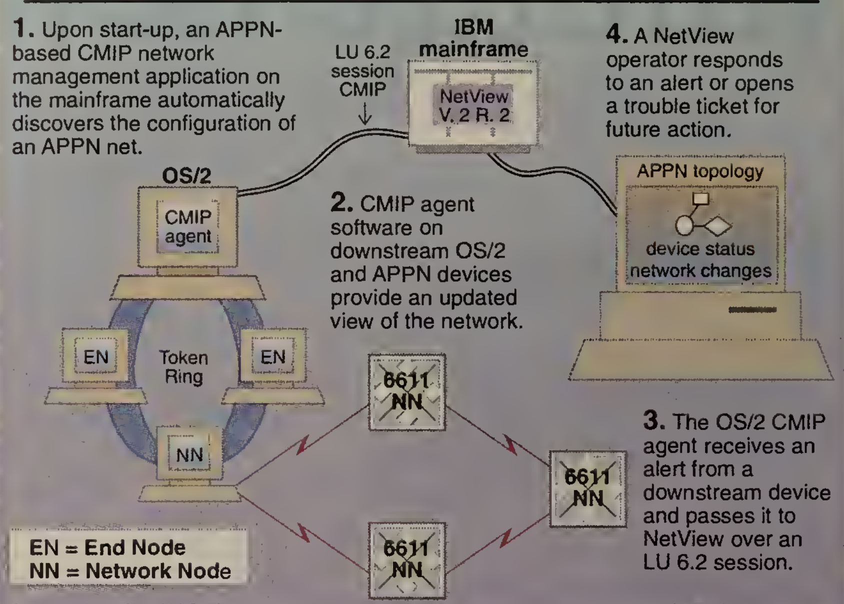
Still, analysts say IBM hasn't really spelled out that NetView will remain the strategic platform for managing APPN nets.

"I don't think IBM is even sure yet how APPN nets will evolve," says DataPro's Dymek. "But it is clear that with all of the downsizing many SNA users are going through, they wouldn't want to keep the mainframe involved in APPN network management if they didn't have to."

Opening up

Most of the enhancements added to NetView recently, reflecting users' moves toward more open, multivendor environments, have been directed toward better management of non-IBM nets and devices rather than strictly SNA and APPN.

IBM's future APPN net management scheme



1. Upon start-up, an APPN-based CMIP network management application on the mainframe automatically discovers the configuration of an APPN net.

2. CMIP agent software on downstream OS/2 and APPN devices provide an updated view of the network.

3. The OS/2 CMIP agent receives an alert from a downstream device and passes it to NetView over an LU 6.2 session.

4. A NetView operator responds to an alert or opens a trouble ticket for future action.

EN = End Node
NN = Network Node

GRAPHIC BY TERRI MITCHELL

SOURCE: IBM, RALEIGH, N.C.

For example, the latest release of NetView, NetView Version 2 Release 3, which became available last month, contains the company's first object-oriented database for managing multivendor net devices and a new graphical monitor so users can get a clearer view of their enterprise.

For instance, IBM added to NetView something called the Resource Object Data Manager (RODM), a centralized object-oriented database that will keep track of the systems and devices being managed. Ultimately, users and third-party vendors will be able to build objects that can be stored in RODM and enable NetView to monitor and control multivendor equipment.

NetView's new graphical display, Graphics Monitor Facility (GMF), will be able to monitor and display RODM objects and management data.

Analysts say this latest release of NetView will give users better control over non-IBM LAN and wide-area network devices, while helping to fulfill NetView's promises of being "a manager of managers."

"We've talked about making NetView a powerful manager of managers in the past," says Robert Shaw, a program manager in IBM's network management solutions development group. "Now with GMF and NetView Version 2 Release 3, we are giving it the tools to do the job."

This latest release of NetView also has one other major enhancement — SNMP support, which enables it to manage devices on TCP/IP nets.

Analysts say the addition of SNMP to NetView will help current SNA users manage any TCP/IP net that may be coming onto their corporate backbone. NetView's SNMP functionality overlaps with the functionality that NetView/6000 supplies. However, analysts say users looking at NetView/6000 likely don't have a mainframe or have decided not to manage their TCP/IP environments with NetView, so competition between the two platforms is minimal right now.

Users at Nomura Research America, a financial services company in New York, are giving the SNMP support in NetView a shot and have assigned it a passing grade so far. The company has only had NetView Version 2 Release 3 installed since late April and has a mixture of TCP/IP and SNA on its backbone.

"Our goal is to have one central management platform that can handle both SNA and TCP/IP," says Lionel Geltman, assistant vice president of Nomura. "We have a big investment in NetView, and we intend to keep using it as we add TCP/IP devices to our backbone."

Geltman says he's seen no evidence of IBM slowing down in developing new features for NetView. "IBM responds to what its customers want and what its user groups tell it they want," he adds. "If IBM isn't meeting the demands of NetView users, there are going to be a lot of unhappy people, and IBM doesn't want that."

Indeed, IBM cannot risk angering users.

"NetView is clearly the way we will be managing our networks in the future," says Paul Dolbec, director of network planning at Unum Life Insurance Co. in Portland, Maine. "We have no reason to think otherwise at this point."

But Dolbec isn't completely happy with NetView. He says NetView isn't as robust as it should be when it comes to managing LANs.

"We'd like to have better LAN performance and tuning capabilities from NetView, and we'd like to see NetView monitor LAN traffic as closely as it monitors mainframe functions," he says.

The new kid

While IBM struggles with the positioning of NetView and NetView/6000, it has settled on its departmental LAN manager — LAN NetView, which was previously known as LANfocus. However, the product hasn't garnered as much attention as its siblings, mostly because it won't be available until next month, according to Rich Lechner, product manager for LAN NetView. LAN NetView promises mainframe-like systems and net management capabilities for LANs consisting of Intel Corp.-based equipment that ranges from personal computers to network interface boards.

The product runs on OS/2 and contains a variety of features that will help users monitor and control LAN node operating systems, applications and software distribution. It will also include performance, configuration and fault management applications developed by IBM and third-party partners. LAN NetView will use both CMIP and SNMP to communicate with Intel-based IBM and non-IBM devices on the LAN.

Unum has evaluated LAN NetView but has not committed to using it yet. The insurance firm recently purchased another company that has multiple Novell, Inc. NetWare nets and is currently evaluating the best way to meld the management of its existing token-ring environment with the NetWare LANs.

Dolbec's decision may not be an easy one, but at least Unum now has a choice of IBM platforms from which it can manage LANs, analysts say.

"Some users want distributed network management systems, some want a centralized host, and some want both systems to work together," says IBM's Ahuja. "We will be trying to facilitate all three scenarios."

At a time when IBM is feeling a financial pinch, many wonder if the company can continue this strategy of developing so many different net management products and trying to be everything to everyone. But for now, the lines between hierarchical and distributed net management have been drawn — IBM just happens to be standing on both sides. ☐

Cooney is a senior editor at Network World.

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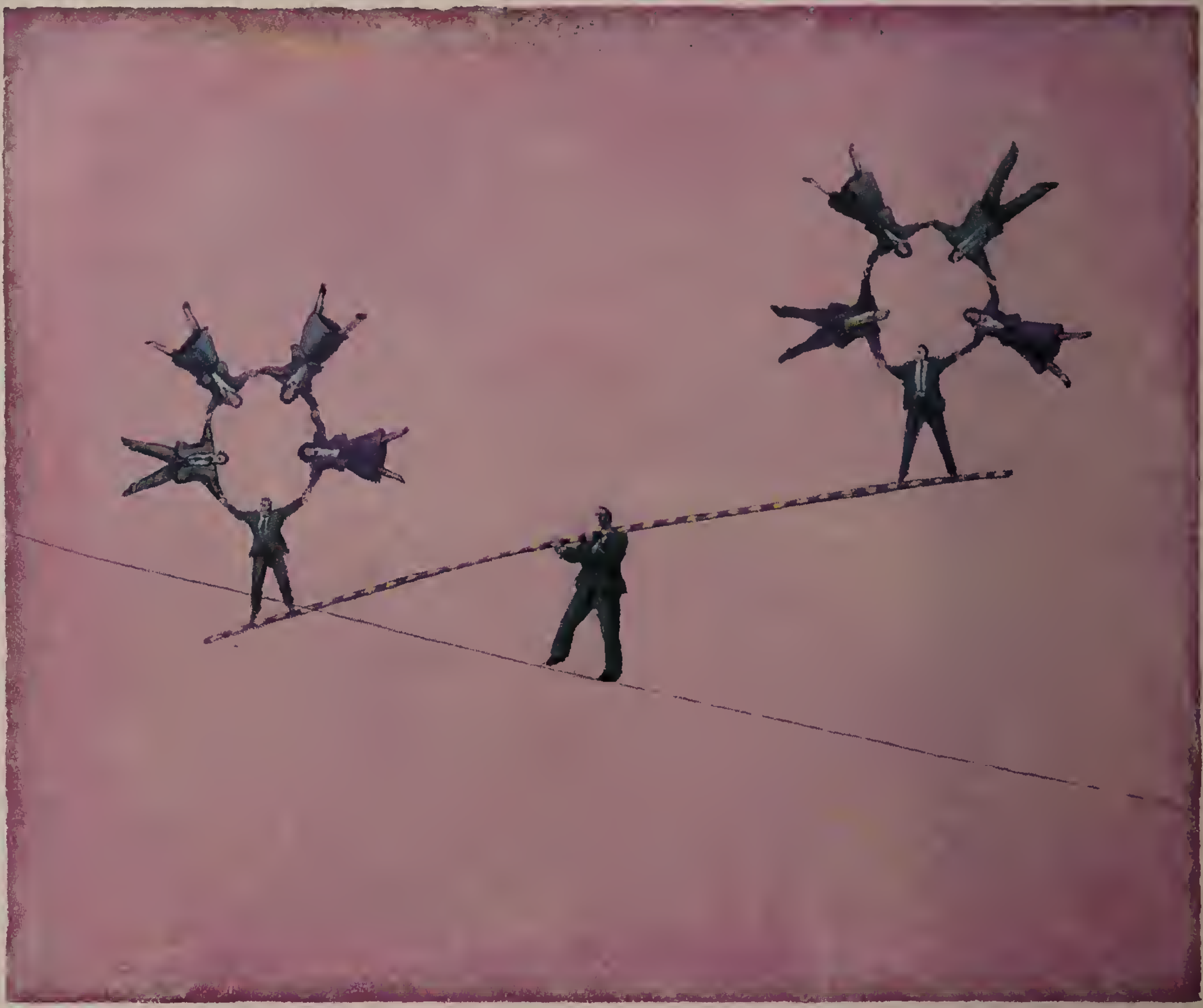
A delicate balancing act

By STEVEN S. KING



IBM's move to Advanced Peer-to-Peer Networking (APPN) and its somewhat uncharacteristic embrace of Transmission Control Protocol/Internet Protocol networking has left many users with more questions than answers. When is one better than the other? Which one will IBM support more strongly? As IBM moves into gigabit-speed networking, will APPN or TCP/IP win more support?

Rick McGee, IBM's director of networking systems architecture, provides an easy answer: IBM will provide balanced support for APPN and TCP/IP. While McGee has waged an uphill — and, ultimately, successful — battle over the past year to give APPN higher visibility, he still carries a torch for TCP/IP.

IBM executive pledges to put equal weight behind APPN and TCP/IP efforts long into the future.

PHOTO ©1993 BOB DONNAN GAMMA LIAISON

Rick McGee

In a recent interview with Steven S. King, a free-lance writer and network analyst in Tucson, Ariz., McGee offers advice on when to use APPN over TCP/IP, explains the benefits that new APPN features, such as High Performance Routing (HPR), have over TCP/IP and promises that TCP/IP and APPN will get full support from IBM — now and indefinitely.

To drive this point home, McGee even went so far as to position IBM's high-end broadband network strategy as a vehicle for transporting APPN and TCP/IP.

Many of the key technical issues McGee addressed are explained in the routing services primer on page 45.

When users have networks with substantial amounts of Systems Network Architecture traffic running over Synchronous Data Link Control and token-ring links, what criteria can they use when deciding whether to implement an IP backbone that encapsulates SNA instead of a pure APPN backbone? The 6611 Network Processor does both.

The decision criteria would depend on the mix of applications and protocols in the customer's network. For example, if a network is running 90% SNA traffic today, then an APPN backbone makes a lot of sense. But if the network is moving rapidly toward applications that are uniquely tied to other protocols, such as TCP/IP or LAN traffic, you would want to take advantage of the [6611] router's multiprotocol capabilities, which might lead to — in today's product — a TCP/IP backbone.

Recent HPR enhancements give APPN the option of having an efficient network layer and automatic reroute around failure that's similar to existing TCP/IP functionality. Is there a level playing field now?

We will see the functions [of TCP/IP and APPN] begin to get closer, but I certainly would not say that the playing field is level. We've seen APPN pick up some of the functions that TCP/IP already has, such as automatic rerouting around link or node failures. But there are some other significant functions in APPN today that TCP/IP does not have, especially in the area of congestion control for constrained bandwidth environments.

> "We will see the functions [of TCP/IP and APPN] get closer, but I would not say the playing field is level."

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What are some of those significant functions? APPN's original Intermediate Session Routing (ISR) layer has hop-by-hop congestion control, which is good for limited bandwidth routes. TCP/IP doesn't have that.

If there is a route through a network where some of the links happen to be high-speed and some happen to be low-speed, APPN does a superior job with HPR and ISR of smoothing traffic patterns across that path, managing potential bottlenecks. ISR handles low-speed, congested links, while HPR handles high-speed pipes. TCP/IP is not as stable in that environment, but that's something the TCP/IP community is working on.

Do you agree with TCP/IP experts who say that class-of-service routing — the ability to choose specific routes through a complex network based on such parameters as throughput, security and delay — is not important for local-area network-based peer-to-peer applications?

I do not agree that class of service is unimportant. It is less important in environments where bandwidth is not a problem.

If you're running on single-media LANs and you're talking one client to one server with relatively simple transactions, then class of service and priority routing aren't important. However, if you're running over a large network, you want to make the most of your transmission expenditures and you want to be able to manage the priorities of different traffic types such as interactive and file-transfer traffic. [That is when] class of service is very important.

> “MPTN is designed for converting LAN protocols to backbone protocols.”
>
> ▲▲▲

IP routers from Cisco Systems, Inc., Wellfleet Communications, Inc. and IBM optimize Logical Link Control 2, SDLC, Network Basic I/O System and, in general, LAN protocol traffic by encapsulating it in IP. This localizes LAN protocol broadcasts, acknowledgments, timers, keep-alives and other things. Can or will APPN supply this type of multiprotocol transport functionality without upgrading everything to APPN End Nodes or Network Nodes?

We can carry TCP/IP applications over an APPN backbone using the Multiprotocol Transport Networking architecture. We've recently announced some products under the name AnyNet (see story, page 49), which are implementing this MPTN architecture. One thing MPTN is designed for is converting LAN protocols [for example, NETBIOS and IPX] to backbone protocols such as APPN.

It also can compensate for the deficiencies of the LAN protocols without making changes to end nodes. So, in this sense, it's going to be much easier for many customers, especially those with SNA networks today, to move to APPN to gain the advantages of lower line costs and lower administration costs. [They can then] use APPN as the multiprotocol backbone to carry IP applications and, in the future, NETBIOS and other applications.

Will it be easier to run IP Sockets applications over an APPN transport or to run LU 6.2/Common Programming Interface for Communications (CPI-C) applications over IP?

Well, these requirements are exactly why we developed the MPTN architecture and the AnyNet products. The MPTN architecture allows applications written to the Sockets interface to be run straight over APPN networks. And, conversely, it allows LU 6.2-specific applications to run directly over TCP/IP networks. MPTN makes both these equally viable. And as you know, the X/Open Consortium [Ltd.] is working very hard on the MPTN architecture to provide these specifications to all vendors.

In terms of standards, TCP/IP is probably one of the most widely embraced in the history of the network industry. How do you see APPN moving in terms of standards?

We are moving very rapidly to make APPN an open technology — open to other vendors for their implementation and input into the architecture and design process. I don't see a lot of sentiment in the [Internet Engineering Task Force] or other standards bodies for accepting something like APPN as a standard, but I'm certainly willing to work more openly with the IETF and with other vendors.

Both TCP/IP and APPN are variable-length packet transports, and so is frame relay, for that matter. But many in the industry believe that the future is in fixed-length cell switching technology, such as Asynchronous Transfer Mode (ATM) and broadband Integrated Services Digital Network. Is there any bias or philosophical bent at IBM, one way or the other?

We are very committed to an ATM direction, and we're participating heavily in the ATM Forum. On the other hand, we see some environments where variable-length packet technology can optimize bandwidth use.

You can think of it as a higher speed, generic, frame relay-type of packet switching technology. We also see an environment where there is a common set of network control functions that can operate over either a variable- or fixed-length switching technology.

> “We are moving very rapidly to make APPN an open technology — open to other vendors.”
>
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(continued on page 46)

A routing services primer

Two of the most essential services in any large network are route calculation and congestion control, which are provided at Layers 3 and 4 of the seven-layer Open Systems Interconnection model. These services are provided differently in IBM's Systems Network Architecture, Advanced Peer-to-Peer Networking (APPN) and Transmission Control Protocol/Internet Protocol.

Route calculation is the method routers and other network devices use to find the most efficient data path from one end node to another. Some routing protocols calculate routes using various class-of-service parameters such as the amount of bandwidth needed, security and propagation delay. In SNA and APPN, route calculation takes place before data flows between end points. When SNA and APPN calculate a route through a complex network, they factor in any class-of-service parameters requested by applications.

For instance, if an application requires low propagation delay and high security, SNA and APPN use route calculation to establish a connection over a secure leased line for its low delay and high security as opposed to a public satellite link. APPN's original Intermediate Session Routing (ISR) and new High Performance Routing (HPR) support class-of-service routing for all network sessions. Both are connection-oriented in the sense that a deterministic route is established prior to data flowing.

IP calculates routes on the fly. When data must flow through several routers, routes are set up on a router-to-router basis. This is sometimes called “connectionless” routing because no explicit end-to-end connection is set up before data flows. Even though it is essentially connectionless, IP can provide class-of-service routing by keeping multiple topology tables in memory, one each for selecting secure, low-delay or high-speed interactive routes, for example.

Class-of-service route selection is different from priority routing. After data starts flowing, priority routing minimizes transmission delay by allowing network devices to temporarily hold onto low-priority packets so that high-priority packets can be sent first. SNA, APPN and IP all support priority routing.

Class-of-service is more important in networks with a mix of batch and interactive traffic running across low- and high-speed lines. This is typical of large SNA networks. For years, SNA networks got by with 9.6K and 19.2K bit/sec tail circuits to end nodes, while front-end processors were linked via a high-speed backbone. Class of service is a part of APPN and SNA.

TCP/IP nets tend to have high-bandwidth wide-area network links and a democratic style of network sharing, making it less necessary to assign a class of service to TCP/IP applications.

Congestion control

Once data packets start flowing across a network path, there is often the need to reduce congestion when intermediate nodes, such as routers, get overloaded. The process of congestion control — also called pacing — takes two forms: end-to-end or hop-by-hop.

With both styles, intermediate nodes keep track of packets and control traffic rates using a sliding window protocol, packet-received acknowledgment and similar techniques.

SNA's hop-by-hop pacing takes place between any and all nodes — end nodes and intermediate nodes — along a path. APPN's original ISR also supports hop-by-hop pacing. Although hop-by-hop pacing is important for controlling congestion on small pipes such as 56K bit/sec links, it is inefficient on high-speed links because of the overhead it incurs in routers.

IP and APPN HPR provide end-to-end pacing only. However, TCP/IP has a source-quench feature that could enhance IP congestion control between nodes, but it is not implemented by major router vendors.

The end-to-end congestion control of IP and HPR has the advantage of eliminating pacing overhead in intermediate nodes. For high-speed pipes, end-to-end pacing is ideal. When an end node senses that it is receiving more traffic than it can process, it signals its partner at the other end to slow the rate of traffic. However, when an intermediate node gets overloaded, it simply drops packets, assuming that the end node will detect missing packets and request a retransmission.

End-to-end pacing is best for networks with clean high-speed digital lines that have minimum congestion and drop few packets. But where there is error-prone, low-speed lines, end-to-end pacing drops numerous packets, wasting bandwidth and forcing end nodes to retransmit.

If an end-user organization has the luxury of high-bandwidth throughout the network, then end-to-end pacing with IP and APPN HPR are best. But if the network includes lower speed congested lines, then APPN's ISR hop-by-hop pacing will provide improved line efficiencies, better application response time and lower communications costs.

For large complex networks, the ability to tune network paths with hop-by-hop congestion control and class of service may be an advantage. In the future, when communications costs drop another order of magnitude or so, end users will be able to afford secure high-bandwidth pipes throughout the enterprise, eliminating many of the advantages of hop-by-hop pacing and class-of-service routing.

— Steven S. King

(continued from page 45)

Network control functions?

This involves things like reserving and managing bandwidth through a wide-area network or WAN/LAN environment. It involves address management, congestion control and high-speed connection setup. This is the environment where connection-oriented communications is key because you cannot effectively manage bandwidth in a connectionless packet environment [for example, IP datagrams].

Over time, I think you will see that the connection-oriented mechanisms of APPN are going to become more important because the industry is moving toward connection-oriented protocols in the high-speed environment.

Along those lines, APPN's new HPR layer is based on a deterministic source routing algorithm that calculates the connection in advance. Will HPR technology scale well to high-speed networking?

Our analysis shows that yes, the underlying packet technology of APPN HPR will scale well to the high-speed environments, around T-3 speeds.

To go much higher than that, you would be required to have the network control enhancements.

So for roughly over 45M bit/sec, you're talking about new hardware

(continued on page 48)

Chevron sees new APPN as viable option

Nancy Vandell, information architect at Chevron Information Technology Co., believes that IBM may have changed its ways.

Chevron is a major user of Cisco Systems, Inc. routers, which it uses for its Transmission Control Protocol/Internet Protocol-based enterprisewide multiprotocol internet, and applauded the formation of the Cisco-initiated APPI Forum at the INTEROP 92 Fall trade show. The Advanced Peer-to-Peer Interface (APPI) was intended to give routers peer-to-peer capabilities over Systems Network Architecture nets.

Vandell says Chevron had concerns about how its IBM mainframes would be able to fit gracefully within the company's strategic commitment to TCP/IP. Technical problems with IBM's Advanced Peer-to-Peer Networking (APPN) and IBM's history of not making complete and current versions of its standards available to third parties made the multivendor, open APPI standard a good counter to IBM's APPN inadequacies.

What's more, Vandell remained skeptical when IBM held its APPN Implementors Workshop this past spring. In the workshop, IBM offered a remedy for APPN's technical problems, sought third-party vendor input, offered to send standards to the Internet Engineering Task Force and separated IBM patents from IBM specifications.

That separation enables vendors other than IBM to write APPN-compatible software without tangling with complex intellectual property issues or paying extremely high royalties.

But in the past month, Vandell has come to believe that "IBM is making a good faith effort" to make its specifications available to all APPN Implementors Workshop vendors and to address the technical problems that got in the way of APPN being a viable networking solution in the past.

So Chevron is now happy to work with the improved APPN, which should result from the workshop.

"APPI was not the basis of our network," she says.

Yet Vandell thinks the APPI Forum had its place.

"It sent a strong message to IBM," which the company seems to have received. Ultimately, she says, Chevron "doesn't care who does it" — that is, comes up with an open standard to provide peer-to-peer connections for SNA networking.

"The last thing Chevron wanted was to add another protocol to those already in place on its network," Vandell explains. "It's a good direction when proprietary protocols can be opened up so SNA can add value to our network."

— *Paulina Borsook*

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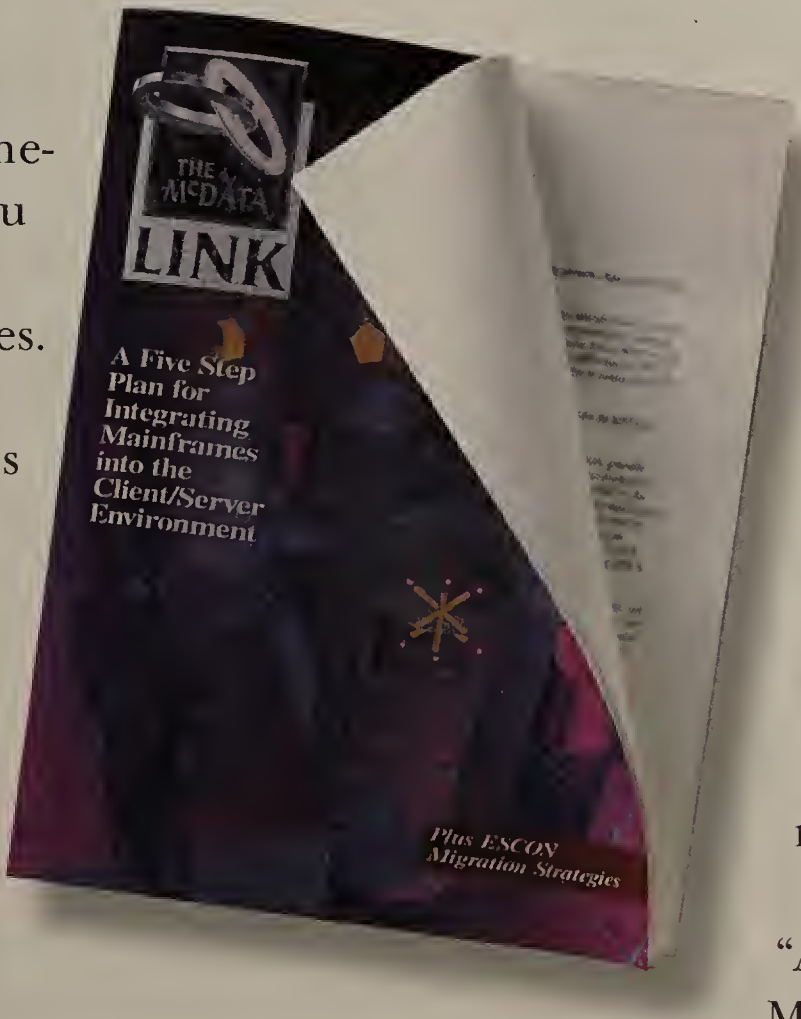
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(continued from page 46)

and a new set of Network Control Protocols?

It's difficult to say exactly what the speed is until we get further along in implementation. Remember that APPN HPR is designed to bring significant advantage to existing hardware platforms. It will speed up APPN implementations on existing adapters [LAN/WAN network interface cards]. To really go much higher than T-3 will require new hardware.

Are there any standards in the area of high-speed network control functions?

There are no standards today. The ATM products, for example, are standard at the cell-definition level. But the network control functions and the way that multiple nodes are logically connected in a network are not standardized. We expect that the ATM Forum will step up to this kind of work, perhaps as early as this year, and we have some ideas we think will be well received.

Will either TCP/IP or APPN have an advantage in the upcoming high-speed network era?

IBM is committed to helping both protocols run at higher speeds. And we think that with our gigabit network control functions, we have [solutions] for both protocols.

So is it fair to say that IBM's support for both APPN and TCP/IP is independent from your efforts in the high-speed and gigabit areas?

Our support for APPN and TCP/IP is a full commitment to both protocols for the long term, and we intend to make both of them advantaged in the high-speed environment. We're also committed to providing the best integration of APPN and TCP/IP through techniques such as MPTN and our underlying high-speed network control research. And we will happily contribute these ideas to a standards body. ◻

Survey shows that IBM is on right track

IBM's decision to support both Transmission Control Protocol/Internet Protocol and Advanced Peer-to-Peer Networking (APPN) is a wise one, according to a recent International Data Corp. report, which shows that user support for APPN is on the rise.

The report is based on a late 1992 survey of 500 users who are responsible for managing 50 or more personal computers. The results show that 431 of the respondents have PC local-area networks, with 66% of those LANs tied to multiuser systems.

In addition, the report says Systems Network Architecture is currently implemented by 29.1% of all respondents. Of the sites with SNA, 84% are also routing TCP/IP, while 14% are also routing APPN. However, the survey shows that of the 50 SNA users planning to implement a new protocol this year, 60.6% will implement TCP/IP, and 26.7% will implement APPN.

Half of the SNA users rely on products that route SNA across LANs, mostly through encapsulation within other protocols.

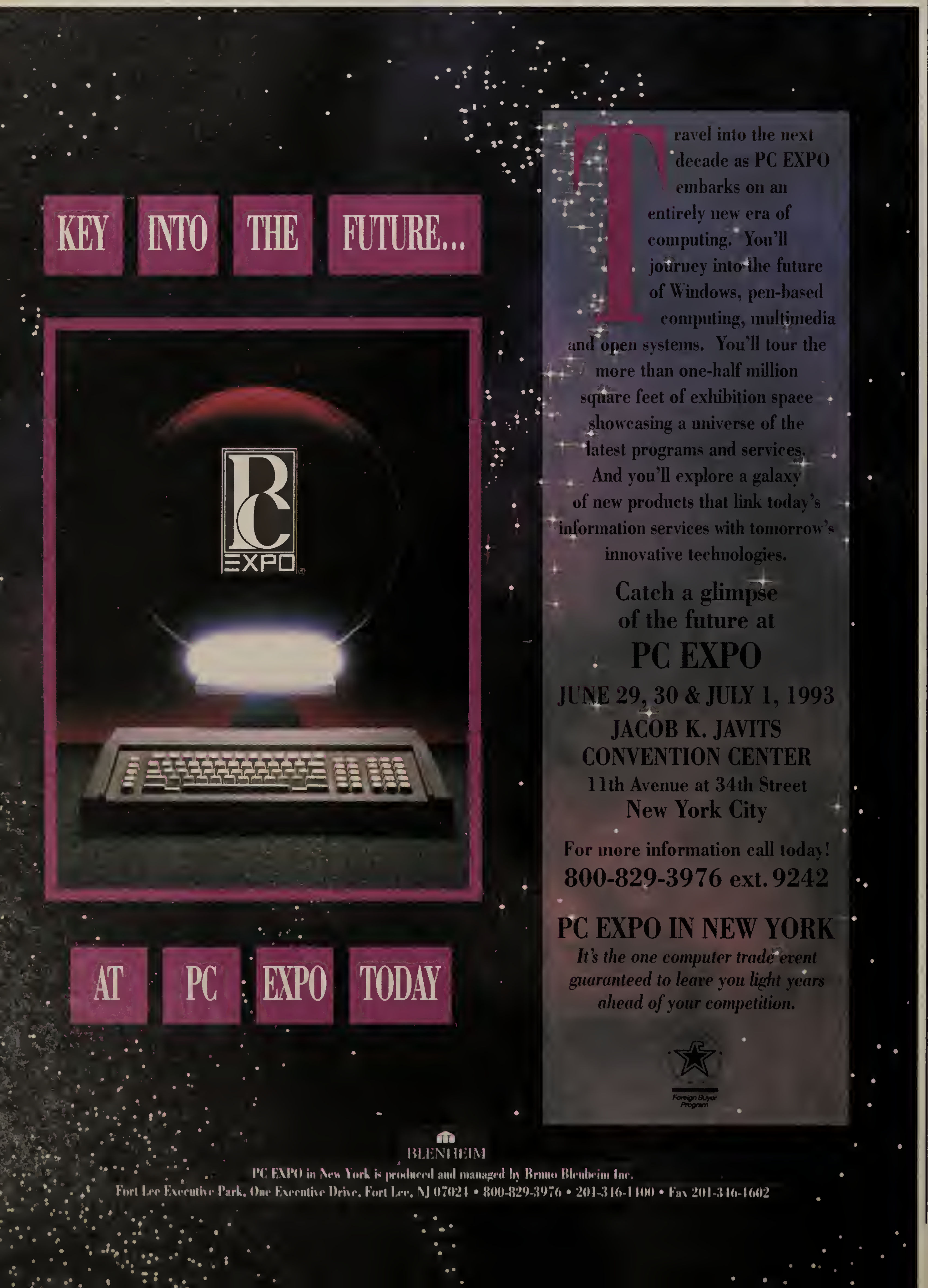
Of the total respondents, half have implemented TCP/IP, and 4.6% have implemented APPN. Of the 252 users who reported that they will implement a new protocol during the next year, 44.9% plan to implement TCP/IP, 14.1% said they will implement SNA, and 7.9% plan to implement APPN.

According to the report, TCP/IP's popularity is due to its ability to connect a diverse array of systems. Other factors include the adoption of LAN-centric network architectures and the emergence of Unix-based database and distributed application platforms.

Yet the report indicates that users have noticed increased vendor support for APPN, which explains why more users will adopt APPN in the next year.

The report was based on a survey of subscribers to *InfoWorld,* another member of the International Data Group family of publications.

— *Dana Thorat*



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AnyNet anyone?

IBM's new host software will allow protocol-dependent applications to ride transparently over TCP/IP or APPN nets.

By ANURA GURUGE

One bit of oral history handed down over the years claims that when IBM introduced SNA almost two decades ago, it decided to name the technology Single Network Architecture.

Legal concerns eventually convinced IBM to adopt the less contentious Systems Network Architecture, but, unwavered, the vendor lured users en masse to its single protocol environment.

Now, about a half-dozen popular industry protocols later, IBM is still pushing a single protocol environment, but the twist today is that the backbone can be based on the Transmission Control Protocol/Internet Protocol or, if preferred, SNA or even Advanced Peer-to-Peer Networking (APPN) protocols.

IBM's recently announced AnyNet/MVS appears to be an admission that the world isn't purely SNA anymore. AnyNet/MVS promises to enable different types of applications to ride over the various backbone types as an option to multiprotocol backbones. But, while AnyNet/MVS may be a boon to users, it could prove to be APPN's eventual undoing.

Since AnyNet was only announced on March 9, most of IBM's large customers have not had a chance to evaluate it.

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AnyNet/MVS is software that runs on MVS mainframes and permits standard, unmodified LU 6.2 applications to run end-to-end between a host and a personal computer across a TCP/IP network, for instance, or run Unix-based Sockets applications end-to-end between two PCs over an SNA/APPN network. In other words, APPN applications — such as LU 6.2 programs — become TCP/IP-compatible, and vice versa.

AnyNet/MVS adds a new and compelling dimension to multiprotocol networking in computing environments that are, or have been, IBM-centric and consequently have a large population of SNA-based, mission-critical applications. Prior to AnyNet, IBM positioned bridge/router-based heterogeneous, multiprotocol backbones as the best option for handling the protocol cocktail now routinely used by enterprises with local-area network-attached devices.

AnyNet, in time, will support all these diverse protocols. However, rather than doing so using a multiprotocol backbone, AnyNet will use a single protocol backbone based on SNA/APPN, TCP/IP, Open Systems Interconnection or possibly Novell, Inc.'s Internetwork Packet Exchange (IPX).

An IDC survey last year of 202 U.S. IBM customers shows that less than 10% had a "critical" requirement for APPN, while only 40% had an interest in APPN.

By contrast, a bridge/router-based multiprotocol backbone, depending on the applications running on the systems served by that net, typically supports a disparate traffic mix, with different traffic streams invariably using several protocols for its end-to-end control. The backbone and the bridge/routers are multiprotocol-relative to the traffic flowing across them. The bridge/routers contain separate software modules — protocol stacks — to route or bridge the protocols, and the backbone conveys packets between the bridge/routers in such a way that each packet uses the appropriate protocol.

A different option

AnyNet is another, seemingly valuable option for multiprotocol networking that in practice will complement, rather than continually compete with, multiprotocol backbone solutions. Eventually, with future releases of AnyNet, OSI, IPX and Network Basic I/O System will also be added to the list of protocols and network types supported. IBM, on a Unix platform, is already beta-testing TCP/IP Sockets applications running over NETBIOS networks.

Given that AnyNet — originally referred to as the Multiprotocol Transport Feature (MPTF) for Advanced Communications Function (ACF)/VTAM — was only announced on March 9, most of IBM's large customers have not had a chance to evaluate it. When announcing AnyNet, IBM did, however, stress that Boeing Computer Services was a potential customer. Supposedly, Boeing believes that AnyNet could be a valuable interim step, even though it has a widely publicized, long-term interoperability strategy that revolves around OSI.

AnyNet/MVS has been available with IBM's ACF/VTAM Version 3 Release 4.2 since April 30 — two months ahead of schedule. Performance figures for AnyNet — in particular how the end-to-end performance of AnyNet running TCP/IP over SNA compares to bridge/routers that support SNA over TCP/IP via IP-encapsulation — have yet to be made available. Such comparative performance figures are a must before a balanced decision can be made as to the attractiveness of AnyNet vis-a-vis a multiprotocol backbone.

* * *

It is estimated that there are about 10,000 APPN networks worldwide, the bulk of which are AS/400 networks.

* * *

Guts of the converter

SNA, APPN, TCP/IP and NETBIOS traffic streams are supported on a time-division multiplexing basis in a bridge/router-based multiprotocol backbone.

All bridge/router vendors, including IBM, also support the encapsulation of any type of SNA traffic within IP and the subsequent routing of IP datagrams. IBM also offers products such as SNAlink that work by encapsulating TCP/IP traffic in SNA.

AnyNet, by contrast, is the first product built from the perceptive and topical Networking Blueprint IBM unveiled in March 1992. As such, it is all about applications

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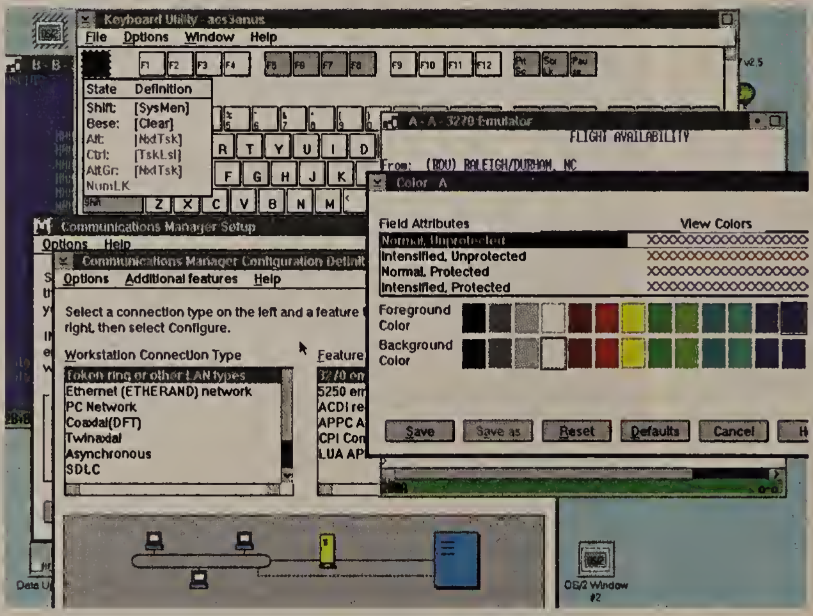

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(continued from page 49)

that are independent of underlying network type. The Networking Blueprint heralded an era of mix-and-match, multiprotocol networking where it would be possible for the same application to be deployed across multiple network types.

The magic that makes this possible by performing the necessary application-to-network-type mapping is a Layer 4 network function referred to in the Networking Blueprint as the Common Transport Semantic (CTS). The mechanics for implementing CTS in a mixed-protocol internetwork are now spelled out in a separate companion architecture known as Multiprotocol Transport Networking (MPTN). AnyNet/MVS is the landmark implementation of MPTN.

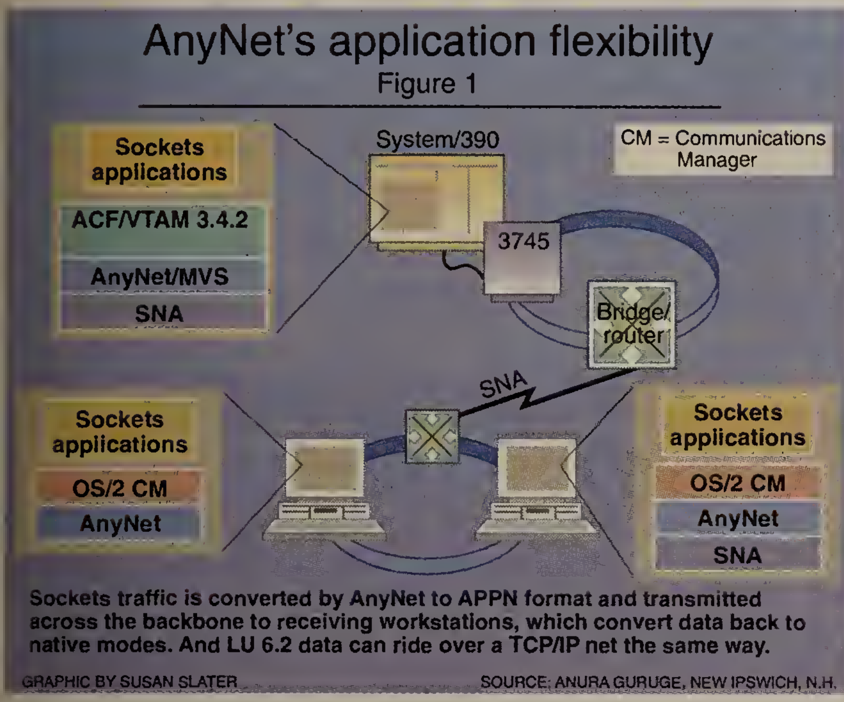
AnyNet's application flexibility

Figure 1

Sockets traffic is converted by AnyNet to APPN format and transmitted across the backbone to receiving workstations, which convert data back to native modes. And LU 6.2 data can ride over a TCP/IP net the same way.

GRAPHIC BY SUSAN SLATER

SOURCE: ANURA GURUGE, NEW IPSWICH, N.H.

AnyNet, though superficially bearing a resemblance to an encapsulation technique, is not one. Instead, the software converts one protocol to another at the end nodes and also performs relevant compensations to overcome any protocol mismatches. It then transmits the data over the backbone, and the data is reconverted into its native mode at the receiving end.

AnyNet, though superficially bearing a resemblance to an encapsulation technique, is not one.

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Hence, the relative merits of encapsulation as it pertains to AnyNet is a key issue. The efficiency of each technique will be a major deciding factor between AnyNet or encapsulation over a backbone. Putting aside efficiency and the use of expensive host computing cycles to perform protocol conversion, AnyNet does offer some notable advantages over encapsulation.

Today's bridge/router encapsulation techniques require extensive manual, predefined addresses and address mappings between protocols. By using advanced algorithms in AnyNet, IBM strives to minimize the amount of human intervention required for network address transformation.

In the future, AnyNet will also permit disparate network interoperability by performing on-the-fly protocol conversion via AnyNet gateways. This will, for example, permit a Sockets application running on top of SNA on a host to communicate with a similar application running on a native Unix workstation in a TCP/IP net. Encapsulation does not address protocol conversion.

Encapsulation on bridge/routers today is limited to IP, IPX, or SNA and NETBIOS traffic. MPTF, on the other hand, intends to eventually be more generic and offer more flexibility for mixing protocols. To be fair, it is worth noting that encapsulation techniques — if proven to be worthwhile — can also be extended to embrace any desired permutation such as TCP/IP in SNA or IPX in SNA.

Currently, AnyNet/MVS includes MPTN code for both the host and workstations running OS/2. The workstation MPTN code is currently downloaded by ACF/VTAM. Code that can be directly installed on workstations from diskettes will be available during the third quarter.

The functions provided via AnyNet will be available for any program-to-program application between either a host and OS/2 workstations, two OS/2 workstations or two hosts. In the case of LU 6.2 over TCP/IP, AnyNet/MVS may be used by CICS, IMS, DB2, ACF/VTAM, MVS/APPC and OS/2 LU 6.2 applications.

LU 6.2 applications are still relatively scarce, though the number is growing slowly but steadily. IBM 3270 applications still account for at least 90% of SNA traffic. AnyNet's support for 3270 applications — for instance, running 3270 traffic across TCP/IP — will be provided by a later release of ACF/VTAM using the same Dependent LU Requester/Dependent LU Server technology that will be used by mainframe APPN to support 3270 traffic.

That means AnyNet will initially have limited appeal since SNA users generally support 3270-type traffic. But, it may well appeal to the base of users developing LU 6.2 applications.

Sockets to me

AnyNet could provide a much needed impetus for LU 6.2's popularity. LU 6.2 applications will no longer be restricted to SNA/APPN environments. They can now run over TCP/IP nets, as well as in future OSI, IPX and possibly even NETBIOS environments. A major potential market niche for AnyNet will be IBM-centric, LU 6.2-based, distributed, relational database applications. It would now be possible to have DB2 to OS/2 DB2/2 interactions take place across a TCP/IP net.

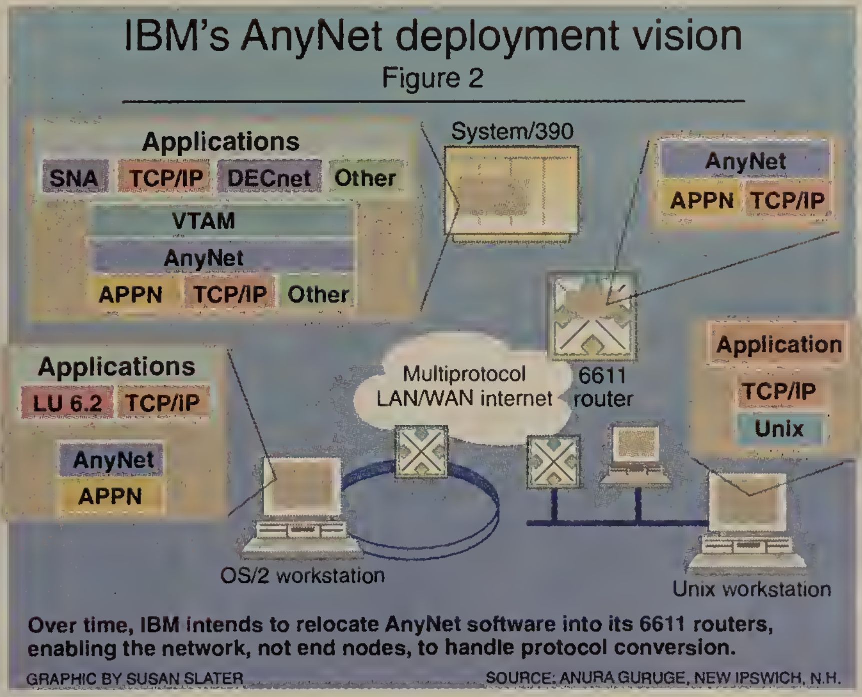
IBM's AnyNet deployment vision

Figure 2

Over time, IBM intends to relocate AnyNet software into its 6611 routers, enabling the network, not end nodes, to handle protocol conversion.

GRAPHIC BY SUSAN SLATER

SOURCE: ANURA GURUGE, NEW IPSWICH, N.H.

In order to support Sockets applications over SNA LU 6.2, AnyNet/MVS will support Berkeley Software Distribution 4.3 Socket-based, C-language applications that use Internet addressing, which eliminates the need for a parallel LAN internet. Sockets over SNA does not require TCP/IP software to be installed on the host. SNA over TCP/IP, however, currently does require TCP/IP for MVS Version 2 Release 2.1, as well as TCP/IP on OS/2 devices.

Though yet to be announced, it is safe to assume that IBM will make AnyNet implementations available on the 6611 bridge/router, RISC System/6000 and Application System/400, as well as on non-IBM platforms. The 6611 software would be particularly important since it would allow protocol conversion to be done by the routers and data would run in native mode on LAN workstations (see Figure 2, this page).

AnyNet could provide a much-needed impetus for LU 6.2 popularity.

▲▲▲

Ki Research, Inc., a Columbia, Md., third-party software house that specializes in Digital Equipment Corp. interconnectivity, has also been working with IBM on MPTN technology since early 1992. There was a joint announcement at the AnyNet rollout that Ki Research is working on an MPTN-based technique for running DECnet applications on top of MVS, as well as a gateway between DECnet and SNA. The recently announced MVS OpenEdition, which will permit Portable Operating System Interface applications to run on top of MVS/ESA, will also benefit from the "TCP/IP-over-any network" capability promised by AnyNet.

Impact on APPN

The architectural decision to select either APPN or TCP/IP as the transport protocol in an AnyNet deployment will not be limiting in any way. Either backbone type will support both TCP/IP and APPN applications, so users can freely run APPN and TCP/IP applications across either a TCP/IP-only backbone or an APPN/SNA-only backbone.

If users decide to select APPN, because of its impeccable SNA roots, as the preferred backbone protocol and run TCP/IP applications across it, SNA/APPN would continue to rule the roost and AnyNet would have given APPN a much-needed boost and a new lease on life.

Conversely, customers — swayed by the growing number of TCP/IP-oriented systems and applications — may elect to standardize on TCP/IP and run LU 6.2 and, in time, other SNA applications across a TCP/IP backbone. If the gravitation toward TCP/IP backbones becomes widespread, APPN fans will rue the introduction of AnyNet. APPN, rather than coexisting next to TCP/IP in a multiprotocol backbone — as presaged by the introduction of an APPN traffic-routing APPN Network Node on IBM's 6611 bridge/router — could be completely usurped by TCP/IP.

All three options — multiprotocol bridge/router internets, an AnyNet APPN backbone and an AnyNet TCP/IP backbone — are likely to be implemented and used. What is at stake is the relative popularity of each option and whether AnyNet will further or hinder APPN's viability.

It shouldn't take long to see how fate unfolds; AnyNet is shipping now. As such, it is a viable alternative to the traditional bridge/router multiprotocol backbone for realizing APPN/SNA and TCP/IP coexistence. However, until actual performance data is available that attests to AnyNet's efficiency and reliability, it would be impetuous to rely on it as one's primary option for multiprotocol internetworking. ◘

Guruge is an independent consultant specializing in internetworking and IBM network architectures. He writes extensively, presents seminars worldwide and can be reached at (603) 878-1303 or via Internet/MCI Mail at aguruge@mcimail.com.

Clarification: The recent Buyer's Guide to relational database management system servers (*NW*, May 3, page 34) did not make clear that Informix Software, Inc.'s Informix-OnLine Version 5.01 supports Binary Large Objects (BLOB). Informix-SE Version 5.01 does not support BLOBs.

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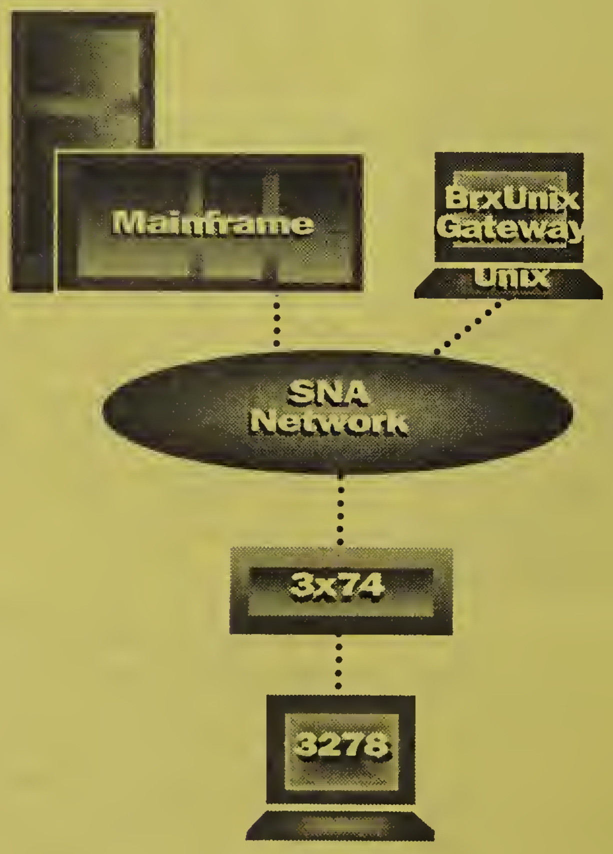

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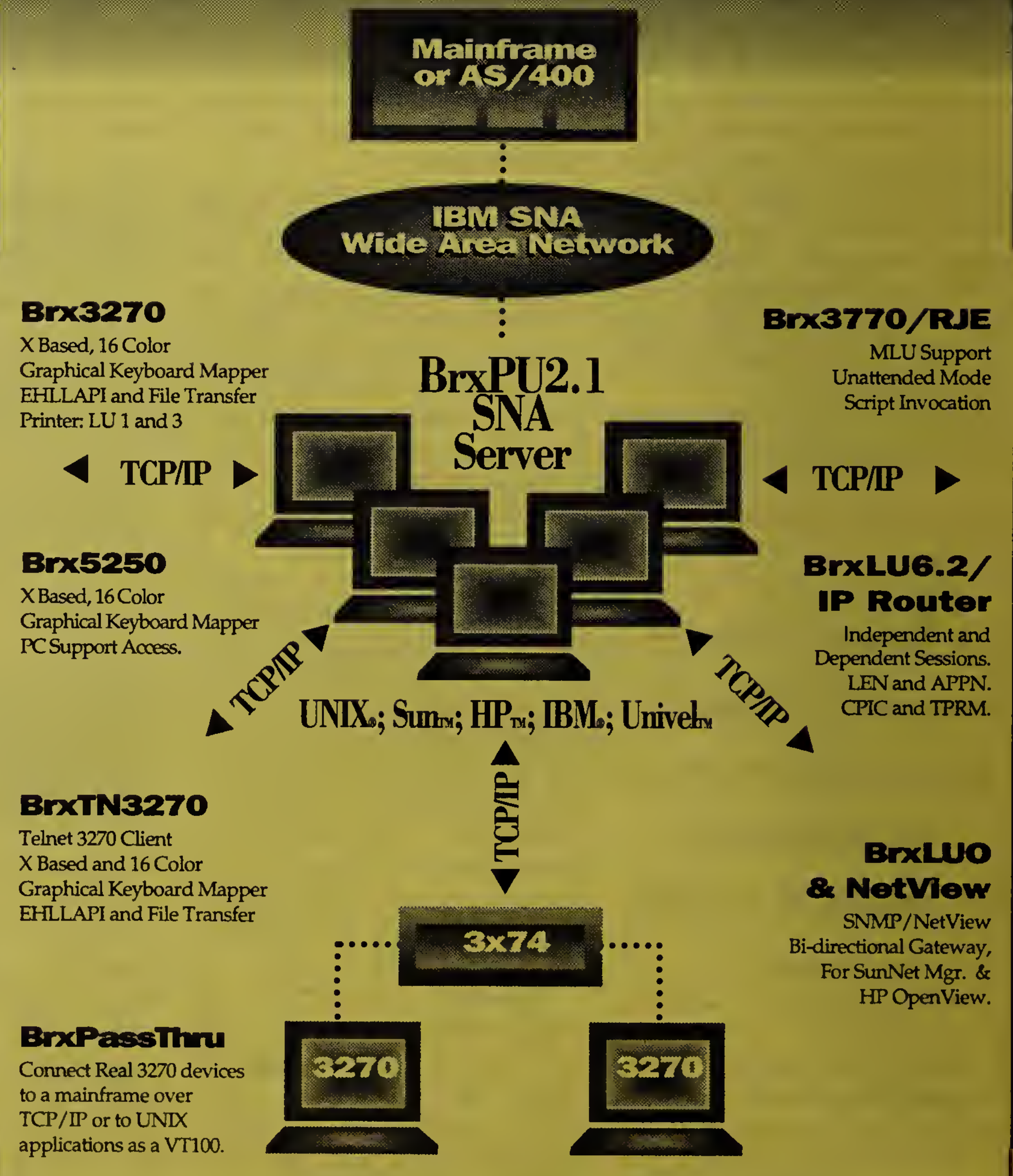

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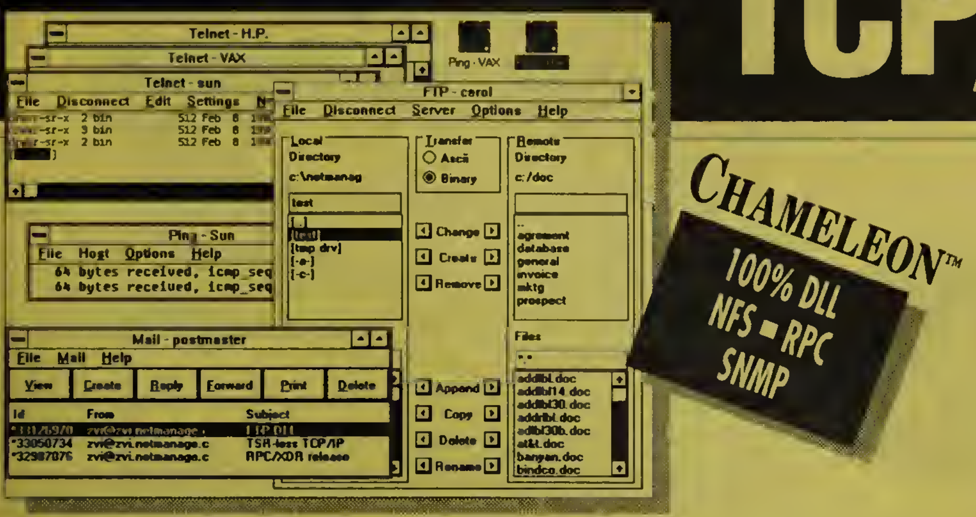

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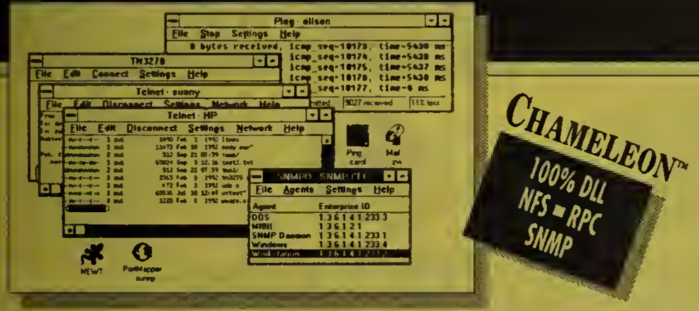

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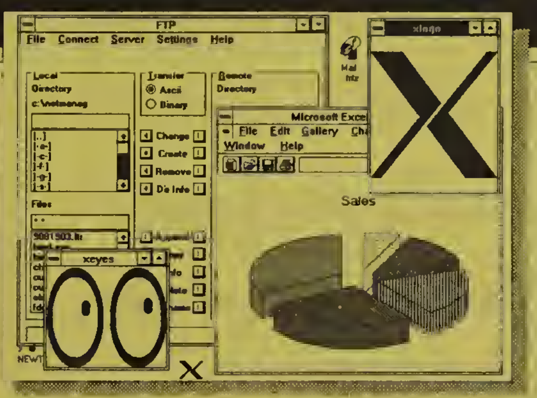

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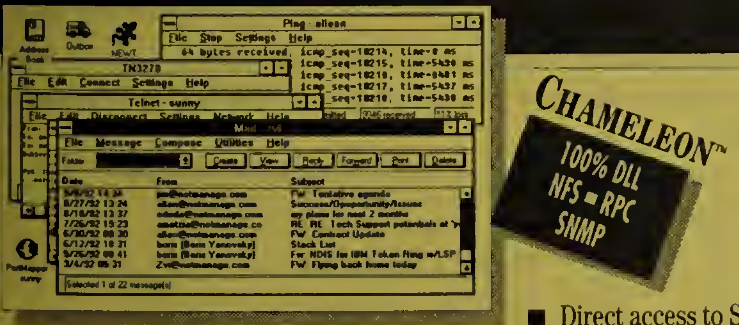

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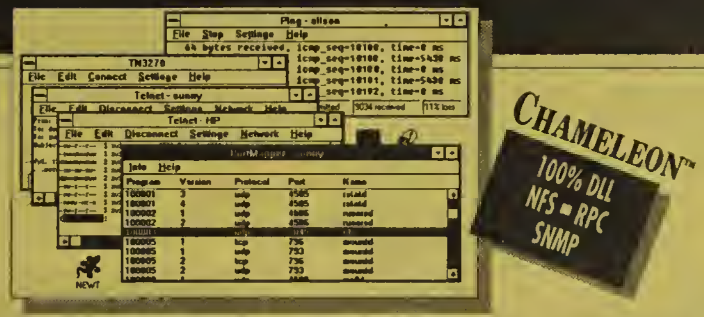

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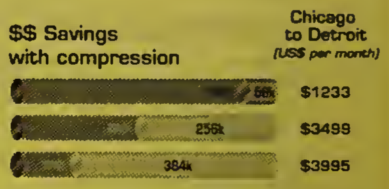

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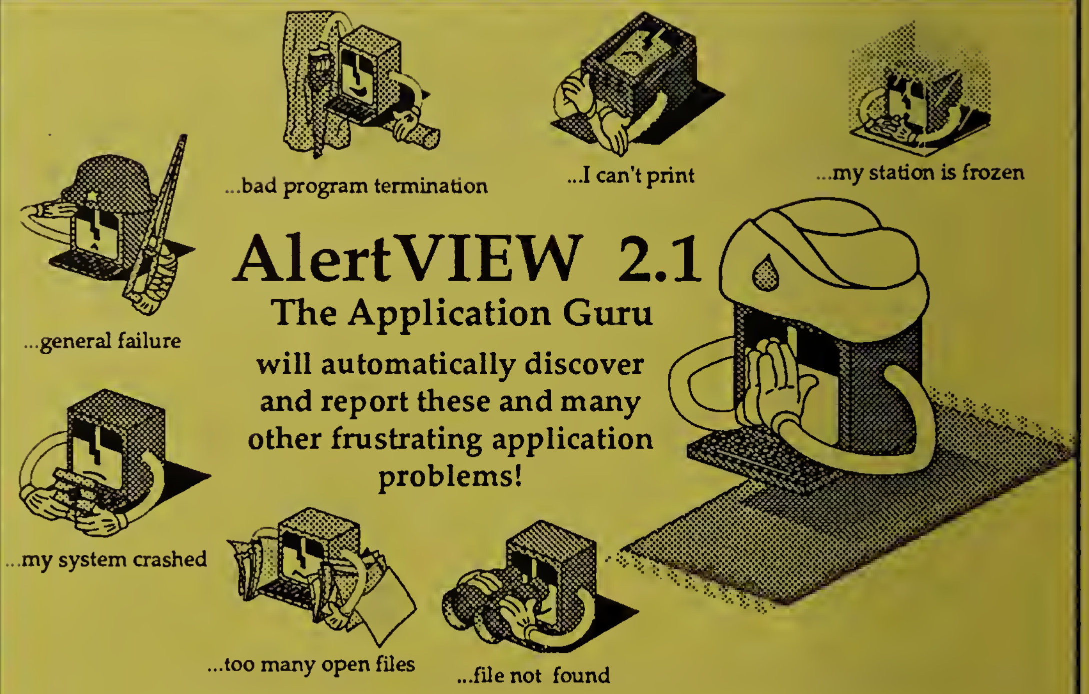

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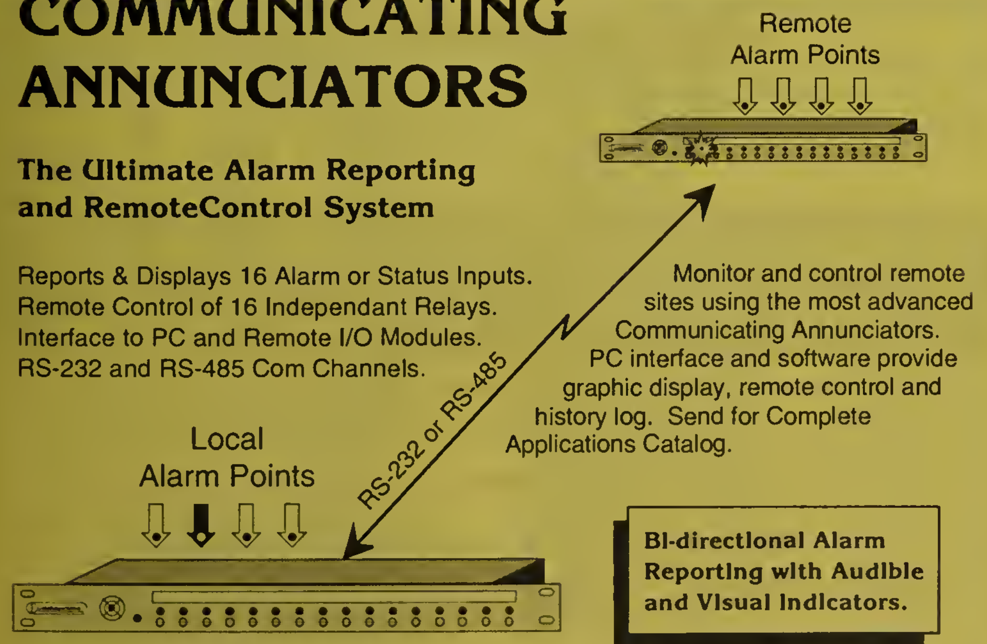

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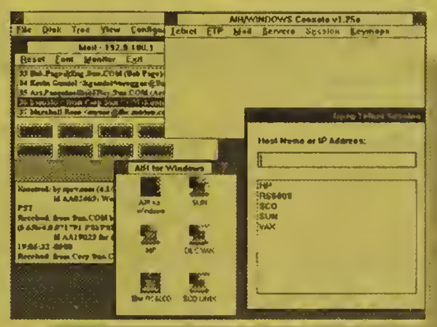

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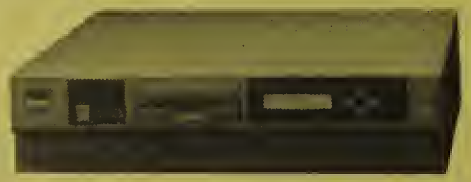

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2 ☐ Request for proposal
3 ☐ Request for information

2. Purchase timeframe
4 ☐ Within 60 days
5 ☐ Within six months
6 ☐ Within one year

3. Scope of purchase responsibility
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4. Purchase influence/number of sites
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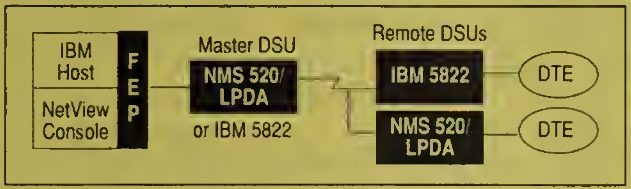

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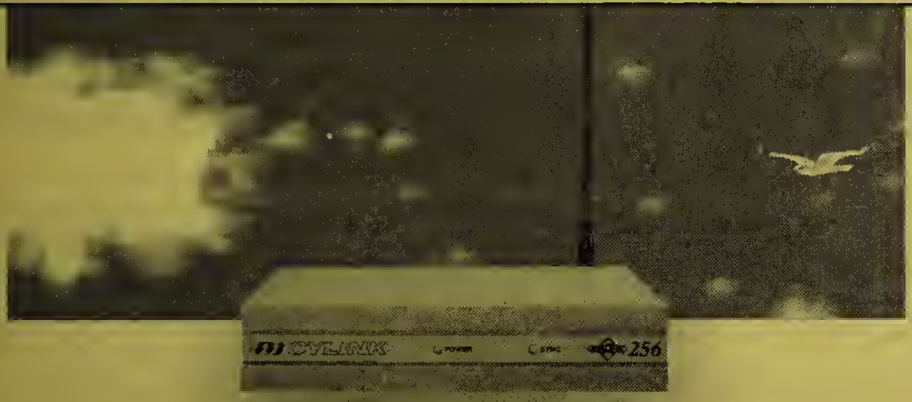

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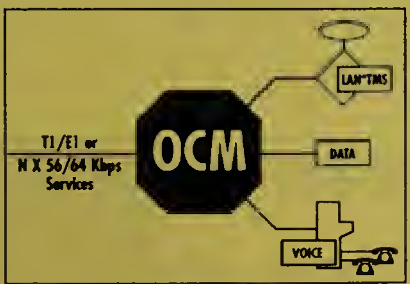

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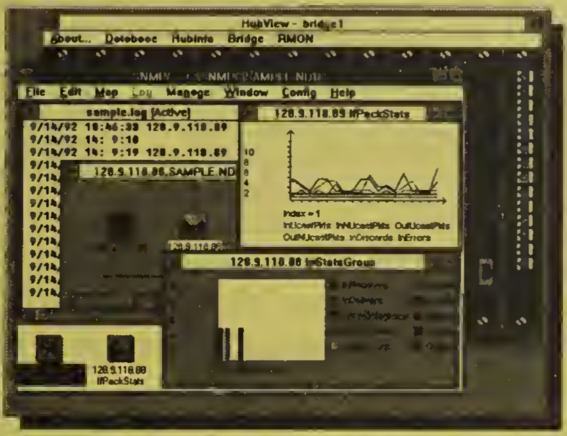

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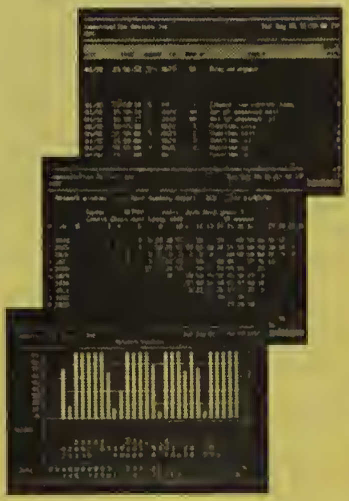

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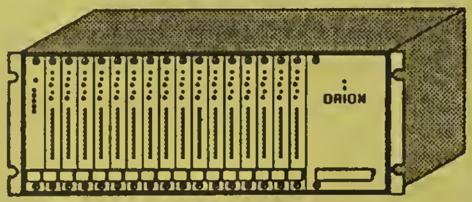

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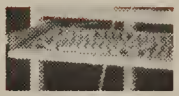

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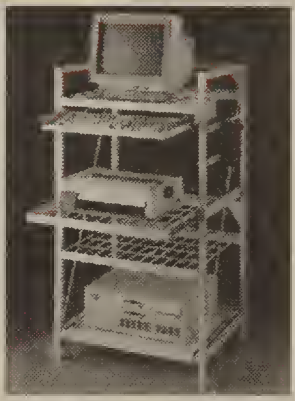

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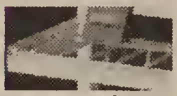

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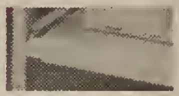

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CISCO SYSTEMS

Compaq joins Microsoft at Work

continued from page 4

Microsoft at Work architecture.

Mobile Companion was the most prominent of the dozens of products, including facsimile machines, printers and phone systems, promised by the approximately 60 firms participating in the Microsoft at Work announcement (*NW*, June 7, page 1).

Players include: fax and copier makers GammaLink, Inc., Minolta Corp., Murata Business Systems, Inc., Ricoh Co., Ltd. and Xerox Corp.; printer manufacturers Canon U.S.A., Inc., Casio Computer Co., Hewlett-Packard Co. and Okidata; chip maker Intel Corp.; software developer WordPerfect Corp.; telephone equipment vendors Ericsson and Northern Telecom, Inc.; and carriers AT&T EasyLink Services, Bell Atlantic Corp., BT North America, Inc., McCaw Cellular Communications, Inc., MCI International, Inc., Sprint Corp. and US West Communications, Inc. More are expected to join.

About 16 firms have licensed the Microsoft at Work architecture for devices now being developed, said Charles Fitzgerald, a product manager in Microsoft's Digital Office Systems Group. "We will evangelize it for years."

The first fax products are expected by year end, and a range of products and services should be on the market by mid-1994. The next release of Windows will include communications links to the Microsoft at Work architecture. Devices based on the new architecture will be compatible with existing products, Microsoft said, although older units will not be able to take advantage of the new capabilities.

The Microsoft at Work architecture extends Microsoft's existing Messaging and Telephone Application Program Interfaces, as well as Microsoft's Windows Printing System and other components of the Windows Open Services Architecture, Fitzgerald said.

Microsoft at Work architecture consists of a simple Windows-like touch-screen interface designed for easy access to features built into individual office devices, a real-time preemptive operating system running on the office equipment, a communications component to link these devices to PCs and each other, a rendering engine to speed transmission of digital documents, and desktop command and control software for Windows-based PCs.

"The operating system will have Windows APIs for developers," Fitzgerald said, "but underneath it's not Windows at all. There's no DOS and no BIOS. It's a new kernel.

"You may see [Open Database Connectivity] on some of these devices," he added. A telephone with Microsoft at Work, for example, might use this interface to automatically tie corporate databases into a billing system.

Together, these components will enable a user, via a single click of a PC mouse or one press of a touch-screen, launch a file as a fax, broadcast it to hundreds of specific faxes, printers and PCs around the world, or download it to mobile devices — in either electronic or hard-copy form — with encryption and authentication for security and resolution equal to the original document.

The architecture also makes it possible to transfer binary files over fax connections, letting users send original files as editable documents, Fitzgerald said. "It's the equivalent of an [Object Linking and Embedding] document embedded into the fax document," he explained.

Compaq: (713) 370-0670; Microsoft (206) 882-8080.

Sybase details Replication Server

continued from page 8

base SQL Server, and Log Transfer Manager, software that can run on either the SQL Server or the Replication Server system.

As the client application modifies data at the "primary" SQL Server site, the Log Transfer Manager constantly scans for such activity and notifies the Replication Server, said Malcolm Colton, director of product marketing at Sybase.

The Replication Server then matches the transactions against "subscription" tables that enable it to know which other databases it should update, Colton said. The Replication Server updates those databases asynchronously, meaning it can revisit and resynchronize a remote database if it is not available on the first try.

Putting it to work

Among Replication Server alpha users is Rolm, a communications equipment maker. Rolm is using the software to support a worldwide defect-tracking system for 1,500 engineers, said Moshe Bitton, software development tools manager at Rolm.

The SQL Server database at each of three major sites — Santa Clara, Calif., Boca Raton, Fla., and Munich, Germany — is configured as a primary record database for that site and as a replicate database for the other sites, including smaller locations.

"The main benefit is that it gives us the opportunity to cooperate over a distributed wide-area network without having to ensure that all sites are always up," Bitton said.

Replication Server appears to be a good product, Bitton said, although he is pushing Sybase to support replication of "long text," a data type that can contain many bytes of information and is used by the Rolm application.

Replication Server is now available in beta release on Sun Microsystems, Inc. SPARCstations and IBM RISC System/6000 platforms. It will be generally available early in the fourth quarter. Digital Equipment Corp.'s Alpha AXP OSF/1, Hewlett-Packard Co.'s HP 9000, NCR Corp.'s System 3000 and SunSoft, Inc.'s Solaris platforms will be in beta test by year end.

Pricing will range from $16,500 to $43,850 per primary site, plus 50% of the primary site cost per replicate site.

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IBM stoking up client/server

continued from page 1

File Services/VM that not only supports VM but also MVS and ESCON.

The new product lets the mainframe act as a server for OS/2-based LANs and Transmission Control Protocol/Internet Protocol-based Network File System clients.

The new version of LANRES will be available for VM and MVS systems this month for $12,600 or a monthly license fee of $262 per LAN server. LAN File Services/ESA will be available in October for the same prices.

Both mainframe programs have also been enhanced to utilize the new functions of the 3172 Model 3. IBM is adding a 50-MHz Intel 80486DX processor, increasing on-board memory capacity from 16M to 8M bytes, and offering a 1G-byte optional hard drive. The existing Model 3 supported a 25-MHz 80486 processor and an 80M-byte hard drive.

The new features will be available July 16 for $16,029 to $53,935, depending on configuration. Current Model 3 users can field upgrade to the new processor for $5,990.

A new release of the 3172's operating system, Interconnect Controller Program Version 3.2, is required for all of the new features. There is no charge to upgrade to Version 3.2. The new version contains full support for FDDI LANs and will let SNA and TCP/IP data share the same adapter. In the past, FDDI was supported only on 3172s configured with IBM's TCP/IP Offload facility, which shifts TCP/IP protocol processing from the mainframe to the 3172.

The 3172's ESCON adapter allows the mainframe to connect to LANs as far as 37 miles away, an increase from the current limit of a few thousand feet. It will also give users the option of linking the 3172 to an ESCON Director, a switch that can direct data to as many as 16 mainframes or partitions on a single mainframe.

"With the new hardware and software features, we expect to double the throughput of SNA traffic and improve TCP/IP flows by 50%," said Al Brandt, product manager for the 3172. "Users on a Model 3 supporting the TCP/IP Offload feature will see a performance increase of about 25%."

The ESCON adapter will be available July 16 for $16,000.

"By adding more power and more configuration options [with FDDI], IBM is addressing the concerns users had with the 3172," said Lucinda Santisario, a market analyst with Framingham, Mass., research firm International Data Corp. "ESCON support is important because we are seeing [an] increase in the number of users moving to that technology."

At the Client/Server World conference in Boston this week, IBM will detail how it plans to deliver client/server applications to handle everything from small work groups to mainframe-based networks. IBM hopes the plan will also give users a road map to follow when they move to a client/server environment.

IBM confirmed the briefing would take place on Monday but declined to give more details.

Key to the plan will be the formation of a line of Client/Server Series products similar to those Big Blue already offers for the Application System/400. With the AS/400 Client/Server Series, users can purchase prepackaged, pretested client/server applications that IBM guarantees will work with an AS/400 server and OS/2, DOS and Windows clients. IBM is expected to replicate the AS/400 offering across its major product lines to include OS/2, AIX, VM and MVS, sources said.

"IBM is trying to get to the point where the user can order client/server solutions in any configuration," said Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy in Washington, D.C. "IBM will offer the ultimate plug-and-play client/server solution."

For example, sources expect IBM to deliver versions of OS/2 2.1 bundled with existing IBM and third-party client applications that will work with servers including IBM's LAN Server and Novell, Inc.'s NetWare. This is one way IBM hopes to make OS/2 the "premier client" it has been touted to be, analysts said.

Analysts said IBM would also work on client/server applications designed around its LAN Server, Communications Manager/2, Database Manager/2 and OfficeVision products, though no further details were available.

Thomas Furey, general manager of IBM's Client/Server unit, told *Network World* earlier this year that the company was working on pretested client/server applications from the Personal Systems, Networking Systems and Enterprise Systems lines of business (*NW*, April 12, page 37).

Carrier spat lands user in limbo

continued from page 1

riers, while Sprint said AT&T was the RespOrg because it hadn't yet processed our [RespOrg change request]. This puts the user in limbo because nobody wants to take responsibility for [the link]," he said.

Krasner would not estimate how much money the firm had lost due to the outage but said it receives 75% to 80% of its orders — for products such as floor coverings — via the 800 line.

"We live and die by our 800 service," he said.

Believing his problem should be in Sprint's lap, Krasner started to push the carrier to address it. Sprint's staff repeatedly told him they would look into the problem and call him back, but they never did.

"Finally, I told them that if they couldn't provide reliable service, the same thing that happened to MCI would happen to them — they'd be out in a heartbeat," Krasner said.

Apache had used MCI Communications Corp.'s 800 service but switched to AT&T after outages in the MCI network cost the company a lot of business.

That, along with Krasner's escalating problem with Sprint, finally got it resolved.

"Once we got the right people involved, they pulled out all the stops to get the problem [diagnosed]."

Krasner does not blame the carriers, but rather chalks it up to an early learning experience. "We think the world of Sprint," he said. "We're not slamming them or MCI."

But industry analysts say early portability problems could limit the carriers' appeal.

"Users are very cautious and are moving their least important 800 numbers to other carriers to see if there are any problems with the process," said Daniel Briere, president of TeleChoice, Inc., a Verona, N.J., consultancy. "If problems arise, they may not move their critical 800 numbers."

The carriers admit that moving among them can be rough for users, blaming the problems on so-called administrative glitches. AT&T said problems like Apache's are not unique.

"The handoffs have not been as clean as we would've liked," a spokesman said, declining to elaborate.

Industry analysts said some of the problems stem from the user community, pointing out that many users do not know who their RespOrg is or what the RespOrg's responsibilities are (*NW*, March 29, page 1).

"Users definitely need to know more about the duties of the RespOrg and get a better understanding of how they accomplish [their duties]," said Dick Goulet, director of business product marketing for Sprint. "It's a new process for all of us."

TI at work on net mgmt. plan

continued from page 1

tronic mail messages.

Such a centralized processing scheme incurs an element of risk in terms of disasters and failures, which is where the new net management strategy comes in. TI is moving toward a distributed management scheme, whereby various element managers oversee their respective domains but are also tied to Spectrum, which provides a centralized point of monitoring and control.

TI's worldwide command center

"What we're trying to achieve involves a real paradigm shift in that e're moving from a centralized terminal/host setup to a distributed client/server [management] environment," said Steve Groce, manager of operations at TI. "Ultimately, we want to merge all the net management pieces onto one console."

Currently, the Systems Network Architecture side of the house is controlled by IBM's NetView, and the Transmission Control Protocol/Internet Protocol net is handled by Spectrum and a series of element management systems from other vendors. For example, Network Equipment Technologies, Inc.'s (NET) Network Management System (NMS) 5000 handles the T-1 backbone, and Ungermann-Bass, Inc.'s NetDirector monitors and controls TI's hubs (see graphic, page 1).

Steve Groce

Spectrum is managing a range of elements — from Cisco Systems, Inc. routers to Microsoft Corp. LAN Manager servers.

TI has also developed a laptop computer application, dubbed Portable Tools, that assists technicians in troubleshooting by letting them tap into Spectrum from anywhere in the net to collect performance statistics and capture, trace and decode packets.

"What we've basically done is replace 100 pounds of troubleshooting and network analysis equipment with a single, lightweight portable laptop, which gives our technicians much more flexibility when working from the road," said Blair Sanders, senior member of the technical staff at TI.

Phase 2 of the management strategy involves integrating the rest of the element managers into Spectrum — a project that should be completed by year end.

"These systems don't necessarily integrate or interoperate well because they tend to be based on proprietary systems," said George Chrisman, manager of electronic communications at TI. "Once we get suppliers to provide SNMP capabilities on some of these products, creating a management environment that's built around Spectrum will be more feasible."

For example, NET's NMS 5000 could pass to Spectrum data gathered using Systems Network Management Protocol traps and Spectrum could draw out information, such as the topology of the T-1 backbone and the status of high-priority links, for example, the bridge/router channels that ride over the T-1 backbone.

To tie the SNA and TCP/IP management worlds together, TI is evaluating a number of approaches, but Cabletron's BlueVision application is expected to play a big role, Chrisman said.

BlueVision consists of software components on Spectrum and the IBM host that provide a peer-to-peer connection between Spectrum and NetView via two LU 6.2 sessions. It allows Spectrum to query NetView for VTAM and host-based application information, as well as receive unsolicited information from VTAM, such as alerts and changes in SNA net status.

Spectrum also offers expert systems capabilities that enable it to draw conclusions about the state of the network and kick off automated responses under predefined conditions. That capability is key to TI's goal for lights-out management, to be implemented during Phase 3 of the plan.

"We will use Spectrum to automatically monitor and control a variety of environmental parameters, such as regulating room temperatures," Sanders said. "Automation of broadcast storm diagnosis and resolution is another good example."

The road to that lights-out environment, however, is a complex one.

"We have some long days in the lab ahead of us because we haven't even scratched the surface yet," he said.

Cisco preps channel link

continued from page 1

in this area."

Cisco will unveil an IBM Enterprise System Connection (ESCON) channel interface card that will enable the router to directly connect to an IBM mainframe at speeds of at least 10M byte/sec. ESCON is IBM's high-speed fiber-optic mainframe channel architecture.

The vendor will also introduce an interface that supports IBM's older but more ubiquitous 4M byte/sec copper-based bus and tag channels.

Marty Thomas, a Cisco product manager, said the products will all but eliminate the need for the 3172, which attaches local-area-networks to mainframe channels.

The interfaces will also let the router take the place of IBM 3745s in select circumstances, he said, such as when the router is used solely to support Transmission Control Protocol/Internet Protocol traffic or to consolidate multiple links into a single mainframe. The Cisco router is equipped with Synchronous Data Link Control-to-Logical Link Control 2 conversion capabilities to support SDLC lines.

The router, however, cannot replace a front-end processor (FEP) that provides PU Type 4 subarea routing capabilities. Advanced Peer-to-Peer Networking support to be added to Cisco routers down the road will remove that limitation, although the router would still lack capacity compared to the FEP.

One source said Cisco had originally looked to partner with McDATA Corp. for the channel-attach technology but later opted for a homegrown solution for the 7000 platform.

Jamie Zartman, McData's senior business manager, said McDATA has licensed Cisco's TCP/IP encapsulation specification so its 6200 channel-attach gateway will offload that task from other Cisco routers such as the AGS+.

Cisco confirmed that it is developing the two channel interfaces for the 7000 and said it will announce a multiphased channel attachment strategy later this summer. The vendor declined to provide further details.

To date, Network Systems Corp. (NSC) is the only other router vendor to announce mainframe channel support. Other vendors, including Wellfleet Communications, Inc., said they intend to add similar capabilities but declined to give specifics.

Michael Zadikian, Cisco's IBM product manager, said the new capability is a growing user requirement.

"Mainframes have been removed from the internetwork equation in the past," he said. "But mainframes are not dinosaurs. Their role has changed and will continue to change, but they're still a critical part of [IBM] users' networks."

Tony Spielman, NSC's director of internetworking, agreed. "The mainframe does have a role in internetworks," he said. "It will act as a huge repository for data and essentially be the biggest server you can find."

Despite the advantages of lower equipment costs and increased overall throughput to the mainframe achieved by lowering the latency involved in multiple hops, Mohen said routers need to be more reliable before users will feel comfortable using them to replace FEPs.

"The 3745s have 99.9% uptime. The 7000 is a highly reliable box, but in the IBM software and field support sense, that is something the router vendors will need to work on," he said.

Timeplex to challenge elite

continued from page 1

prise Router, expected to be announced in August, will be positioned to anchor users' backbone internetworks.

The router will incorporate a 2G bit/sec switching matrix supporting token-ring, Ethernet and Fiber Distributed Data Interface local-area networks. It will support T-1 interfaces, as well as connections to frame relay and Switched Multimegabit Data Services. In the future, it will include an Asynchronous Transfer Mode (ATM) interface that will support links to Ascom Timeplex's ATM wide-area switch.

In addition, the vendor will add features enabling the Enterprise Router to support IBM Systems Network Architecture traffic across internet backbones.

Changing its image

John Moore, Ascom Timeplex's director of worldwide marketing, said the new addition to the Time/LAN line will establish the company as a player in the high-end internetworking market and help Ascom Timeplex change the perception of its being solely a T-1 mux maker.

Cisco's and Wellfleet's high-end entries — the 533M bit/sec 7000 Internetwork Router and 1G bit/sec Backbone Concentrator Node, respectively — became available this spring. Both support multiple LAN and wide-area network interfaces as well as SNA traffic. Each has high packet-forwarding speeds and a highly redundant architecture, and both will eventually support ATM interfaces.

The Enterprise Router will support Transmission Control Protocol/Internet Protocol, DECnet, Novell, Inc.'s Internetwork Packet Exchange (IPX), Xerox Corp.'s Xerox Network Systems, AppleTalk, VINES, Apollo Domain and Open Systems Interconnection. It will also support the key bridging algorithms.

The vendor will unveil two versions of the router, one of which will be able to support up to 60 LAN connections. The router will be manageable through any Simple Network Management Protocol-based net management system.

No information was available on how many LAN or WAN interfaces or what type of SNA features the router will support. Pricing and availability were also not obtainable.

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FCC suspends bypass decision

continued from page 2

commission ruled that the rates filed by local carriers were too high and ordered that the tariffs be investigated.

The competitive access providers greeted the decision with howls of pain.

"Nothing has changed, and nothing will change until the end of this year," said Robert Atkinson, a spokesman for Teleport Communications Group, Inc. "The FCC's inability to discipline the LECs makes it just about impossible to change the status quo."

> "The inability to discipline LECs makes it just about impossible to change the status quo."

▲▲▲

Until the FCC sorts out how much it will allow the local carriers to charge, they will use interim prices based on rough FCC calculations. The commission will be using a table of rate adjustment factors to determine charges for various services. Under the tables, the carriers will only be able to charge a fraction of the price filed in their tariffs.

Although the interim pricing may not be perfect, the FCC is promising to fix it in the coming months. "This is what we could do for now," said Greg Vogt, tariff division chief with the FCC's Common Carrier Bureau. "We intend to take a lot closer look at it and try to get them exactly right."

But Teleport believes the interim rates put competitive access providers at a disadvantage.

"How are we supposed to go out into the supposed competitive marketplace and offer a price?" Atkinson asked. "If we don't know what our permament costs are, there's no way we can give a permanent price."

Teleport's outrage was balanced by the limited gains MFS Communications Company, Inc., a fellow alternative carrier, believes the companies have won with the FCC order.

Cindy Schonhaut, MFS' regulatory affairs vice president, said the FCC is likely to retain the rate reductions that are ordered so far and may even order deeper cuts. MFS will move ahead on collocation, taking advantage of the FCC interconnection order that will take effect on Wednesday.

The FCC's Vogt said the five-month review provided by the Communications Act will be the minimum amount of time that will be needed to calculate the proper charges. But given the FCC's limited staff and resources, the investigation could drag on longer. ◘

Xircom enters wireless mart

continued from page 8

reason "the 802.11 is about as fractious an IEEE committee as there has ever been," King said. "People are struck by how slow it is moving."

The Institute of Electrical and Electronics Engineers, Inc. is not expected to come to a decision for at least a year and possibly much longer. In the meantime, "It's important to have a de facto standard," Belanger said. With the NetWave Alliance, Belanger said, "We'll have it out there as something people can go with. We want to reduce some of the confusion in the market and make wireless LANs a safer buy.

"The alliance is not like a membership," he emphasized. "There's no formal organization." It is just Xircom and a small group of companies that will either act as OEMs or provide the technology in other forms, he said.

Belanger would not name the companies involved because negotiations were still pending, but he indicated that they would include chip makers, systems vendors and networking companies.

Xircom, based in Calabasas, Calif., is also in discussions with network operating system (NOS) vendors, although none have yet committed to the idea, Belanger said. Silicon giant Advanced Micro Devices, Inc., among others, is reportedly on board, but competitors said they have not been contacted.

According to John Donovan, director of the groupware service at WorkGroup Technologies, Inc. in Hampton, N.H., Xircom's success in pocket LAN adapters and its strong presence in the distribution channel give it a shot at creating a viable standard. "Users are familiar with Xircom," Donovan said.

Other observers are skeptical, however. "The importance of this rests heavily on who the partners are," said Eric Zimits, a research analyst at Volpe, Welty & Co., an investment banking firm in San Francisco. To have credibility, the group must include some NOS vendors and wireless LAN competitors, he said.

"Xircom hasn't even come to the party yet," Zimits pointed out. "To say 'We have the answer' may be a little presumptuous." ◘

SynOptics bridges gap

continued from page 2

develop GEM applications, which will run on HP's OpenView, IBM's NetView/6000 and SunConnect's SunNet Manager, and access SuperAgent data on Optivity via an SNMP interface.

"We want to push thinking farther out on the network instead of overloading one net management station, and the SuperAgents allow us to do that," said Marcus Salyer, network manager for the computer science department at Ohio State University in Columbus. "If a lower level device can tell me what's important and make decisions, it makes management more efficient."

Clockwise from bottom left: McGuire, Thomas, Schmidt, Condon, Schwager, Ludwick, Safe, Turner and Matibag.

The SuperAgents come in three flavors. The Asset SuperAgent performs inventory management functions, while Topology SuperAgent maintains a real-time network map of the devices it oversees. Fault Correlator SuperAgent filters alarms and SNMP traps from the devices it monitors, only passing data on the most critical events.

SynOptics' Copeland demos GEM apps.

While the SuperAgents are currently tied to the Optivity system, SynOptics has left the door open to unbundle them if there is enough user demand.

The company has built the SuperAgents along the lines of the Object Management Group's Common Object Request Broker Architecture to ease integration with the Open Software Foundation, Inc.'s (OSF) Distributed Management Architecture (DME).

Analysts see the SuperAgents as a step toward, if not an alternative to, DME. "Anyone looking at DME should talk to [SynOptics] because they're going to deliver more functionality more quickly than OSF can," said John McConnell, vice president of Infonetic Reseach, Inc. in Boulder, Colo. "DME isn't going to come out with anything approaching full functionality for a couple years. Why should users wait [for] distributed management functionality?"

The SuperAgents work hand in hand with the new GEM applications, the first of which will come from NetLabs and include AssetManager and Vision DeskTop. AssetManager, which utilizes the Asset SuperAgent, compiles a complete inventory of hardware and software across the enterprise.

Vision DeskTop will use similar information to generate real-time status information on desktop systems, including the types of operating systems and applications in use, as well as how much disk space is available.

"If SuperAgents and GEM applications really take off, the [management] platform almost becomes secondary because Optivity will be running on all the major ones," he said. "In a way, Optivity would become the new platform."

Others said the new management capabilities would give SynOptics an edge over rival hub makers. "[SynOptics] is looking beyond the physical device and net management issues and building a business management model," said Charlie Robbins, director of communications research at Aberdeen Group, Inc., a consultancy in Boston.

Vision DeskTop will be available on SunNet Manager in the third quarter and on NetView/6000 and OpenView in the fourth quarter. All versions cost $3,995 per user. AssetManager will be available on SunNet Manager in the fourth quarter and on other platforms in first-quarter 1994. It will cost less than $15,000 for a three-user license.

Topology SuperAgent will be available in the third quarter and come bundled with Optivity. Asset SuperAgent will come bundled with AssetManager and be available when that application ships. Fault Correlator SuperAgent will not be bundled with Optivity, but it can be purchased separately in the first half of 1994. Pricing will be determined then.

SynOptics: (408) 988-2400. ◘

Do one-size APIs deliver?

continued from page 2

base APIs will only be useful in supporting simple applications that do not change much, such as decision support programs that involve only a few basic SQL calls.

"Generic APIs will let you do simple queries, and even that is stretching it. This idea of an industry API that allows many-to-many connectivity [among clients and databases] is a dream," said Richard Finkelstein, president of Performance Computing, Inc. in Chicago.

Database APIs cannot effectively support enterprise applications because they do not recognize the unique characteristics and features of each database management system, analysts said. Databases differ in the way they set up records, tables and indices.

Database APIs only access a subset of functionality common to all databases, limiting their usefulness for complex data access routines. Users who deploy these APIs will end up writing special code that overrides the API and enables them to access a database's unique functions.

"The notion that a single interface can hide the complexity of database management systems from developers is nonsense," Finkelstein said.

APIs can also introduce more problems than they solve.

"Any change to an API, application, database or network will disrupt the system and increase the likelihood of a connection failure," said David McGoveran, president of Alternative Technologies, a relational database market research and technical consulting firm in Boulder Creek, Calif.

Users desperately want a generic database API but are not impressed with vendor efforts to date. Some said the emerging database APIs are more market-driven than user-driven.

"These APIs are thinly veiled attempts to grab market share. It's a game of one-upmanship. They each want to be waving the flag in front because they know the front-runner is going to make the money," said Ted Vegvari, network consultant at the Bank of America in Los Angeles.

But some feel that Oracle Corp.'s recent alliance with Novell, Inc. to develop a NetWare Loadable Module version of the Oracle7 database may yield an API that quickly gains widespread acceptance (*NW*, May 31, page 1). "A NetWare database API would automatically work on 70% of the networks in the country, making it necessary for Ingres, Informix [Software, Inc.] and other database vendors to commit to it," said Steve Parsley, assistant to the vice president of finance and administration at Litton Industrial Automation Systems, Inc. in Hebron, Ky.

To address its connectivity problems, Litton is using a database server that translates client queries into appropriate calls for different databases. "We'd love to go directly to [databases] without going through a middle tier," Parsley said.

APIs send positive message

While database watchers are skeptical about generic APIs, E-mail administrators are enthusiastic about the emergence of generic messaging APIs.

"You've always had the tools for direct access to databases. But mail systems have been closed," said Bill Skilton, project lead for work group applications at Chevron Information Technology Co. in San Ramon, Calif., an early user of Microsoft's MAPI. "Until now, we've never been able to manipulate information in the mail engine from within an application."

Michael Young, manager of software tools integration at W.R. Grace & Co., a Boca Raton, Fla., speciality chemicals manufacturer, is also using MAPI and called it "a pretty comprehensive API." But he conceded that any generic API will lag in providing absolute compliance with E-mail systems as they evolve.

"You will more than likely not be able to adopt leading-edge product releases right away," he said. "There is always something to gain and lose when you are trying to shield yourself from vendor platform lock-in.

Roger Mizumori, manager of messaging services planning at

(continued on page 67)

Looking for a single API

While early Vendor Independent Messaging (VIM) and Microsoft Corp.'s Messaging Application Program Interface (MAPI) users seem pleased with their results, there is growing demand among E-mail administrators for a single set of messaging APIs, such as those being defined by the X.400 Application Program Interface Association (XAPIA).

XAPIA this week is expected to release its first Common Mail Call (CMC) messaging API specifications, including one for sending mail from applications. There may also be CMC product demonstrations at Electronic Messaging '93 in Atlanta this week.

Michael Young, manager of software tools integration at W.R. Grace & Co., said the firm is pressuring Microsoft and Hewlett-Packard Co., two of its messaging vendors, to support the CMCs. And Boeing Computer Services has actually joined XAPIA to help drive development of common mail APIs.

Standardizing on a single API should cut training and support costs, said Pete Donaghy, manager of customer services and the support laboratory at Hughes Aircraft Co. in Long Beach, Calif., and an XAPIA backer.

— Bob Brown

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Do one-size APIs deliver?

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Boeing Computer Services in Bellevue, Wash., said generic APIs must remain constant enough for ISVs and users to implement. "An API can evolve to add functionality and new capabilities we can't even imagine right now," he said.

But David Ferris, president of Ferris Networks, a E-Mail consulting firm in San Francisco, warned that messaging APIs may be emerging too soon given the flux in the E-mail market.

"We've got vendors jockeying to align themselves with or control standards to get the commercial benefits," Ferris said.

DEC building LEN gateway

continued from page 8

Technologies, Inc. that supports Network Job Entry batch and print jobs as well as electronic mail exchange over bisynchronous links between IBM's OfficeVision 400 and DEC's All-In-1 office environments.

DEC's internally developed SNA gateways support PU 2.0 and PU 5, which makes the devices look like SNA cluster controllers and mainframes, respectively.

Lori Dreher, a senior product manager for IBM interconnect products in DEC's networks engineering group, acknowledged that AS/400 connectivity with PU 2.1 support is "very important to many of our customers."

When asked by a user at last week's Digital Equipment Computer Users Society conference here if DEC planned to provide gateway connectivity to AS/400s with PU 2.1 nodes, Dreher said she could not comment on unannounced products but suggested users "keep [their] eyes open."

Those familiar with DEC's AS/400 activities say they have seen a protoype of the new gateway and remarked favorably on its performance. They expect it to be released this fall.

The number and speeds of the links into the AS/400, and the number of sessions supported could not be determined. But those familiar with it say it will support synchronous, 4M and 16M bit/sec token-ring and X.25 links to the IBM minicomputer.

DEC: (800) 344-4825.

IBM outlines architecture

continued from page 8

dors to help standardize Broadband Network Architecture products.

"The strategy makes sense but the biggest challenge IBM faces is justifying the potential cost of all this new technology," said Tom Nolle, president of CIMI Corp., a consultancy based in Voorhees, N.J.

Paul Callahan, senior analyst in network strategy research at Forrester Research, Inc., a market research firm in Cambridge, Mass, cited another hurdle.

"One of IBM's greatest challenges in the high-speed networking arena is to be able to work and play well with others," Callahan said. "They have to understand that they may not be able to drive a high-speed networking standard at that level."

IBM is moving toward ATM, along with many other vendors, and all of them can't differentiate themselves with proprietary protocols, Callahan said. IBM and other vendors that work in the ATM Forum should help curb proprietary tendencies.

> "The biggest challenge IBM faces is justifying the potential cost of all of this new technology."
>
> ▲▲▲

AT&T offers fraud monitoring

continued from page 4

Analysts predicted that the service will cost less than the existing offerings, a move that would make NetProtect Plus affordable to the masses. The AT&T source would not comment on the price but said he anticipates heavy customer demand.

"We're expecting tens of thousands of users to [subscribe] to the service," he said. "We've put together an army of people to handle provisioning so that we can get them all up and running by Labor Day."

The carrier will file a tariff for the offering June 15 and expects it to take effect July 1, pending Federal Communications Commission approval.

The rise of NetProtect Plus will likely mean the fall of a pair of current offerings, NetProtect Enhanced Service and NetProtect Premium Service, the source said.

With NetProtect Enhanced Service, users can customize AT&T's monitoring service profile to catch suspicious calls. The highest level of protection is NetProtect Premium Service, which exempts users from fraud charges incurred within two hours of being notified by AT&T of fraud activity.

"It's been very difficult to qualify customers for these two services because users have to pay a high price for them," the source said. "We'll lower the liability level and probably decide by year end whether to phase them out."

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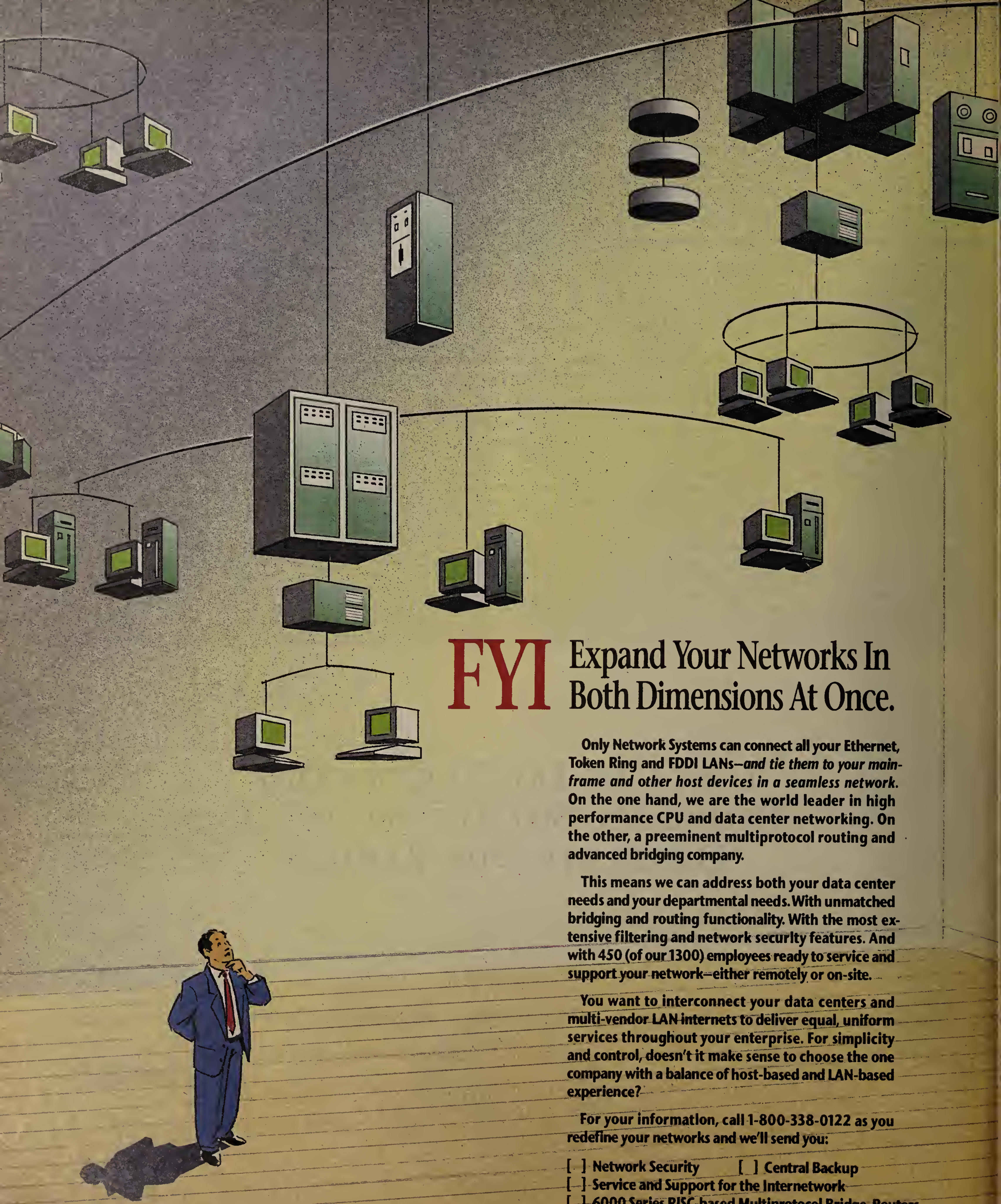

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